Scientific American.

THE ADVOCATE OF INDUSTRY, AND JOURNAL OF SCIENTIFIC, MECHANICAL, AND OTHER IMPROVEMENTS

VOLUME XII. NEW-YORK, MARCH 21, 1857. NUMBER 28.

THE
Scientific American,

PUBLISHED WEEKLY
At 128 Fulton street, N. Y. (Sun Buildings.)
BY MUNN & CO.
O. D. MUNN, S. H. WALES, A. E. BEACH.

Responsible Agents may also be found in all the principal cities and towns in the United States.

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Single copies of the paper are on sale at the office of publication and at all the periodical stores in this city, Brooklyn, and Jersey City.

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Artificial Stone.

Mr. Hodgson's Fire-Proof Stone, the claim of which may be seen in the list of patents granted this week, is affirmed to stand intense heat better than granite, or even than many varieties of fire brick. The granite or quartz used in its manufacture is readily made friable in the usual way, by heating and plunging in water, and neither the materials nor the process appear to be very expensive. It is worthy of attention.

Corn Husking Machine.

This engraving illustrates a machine already in practical and successful use, for not only ridding corn of its husks and nub, or stem, but for so crushing and cutting the husks, and more especially the short portions of stalk termed the nub, that they are prepared for fodder by the same operation.

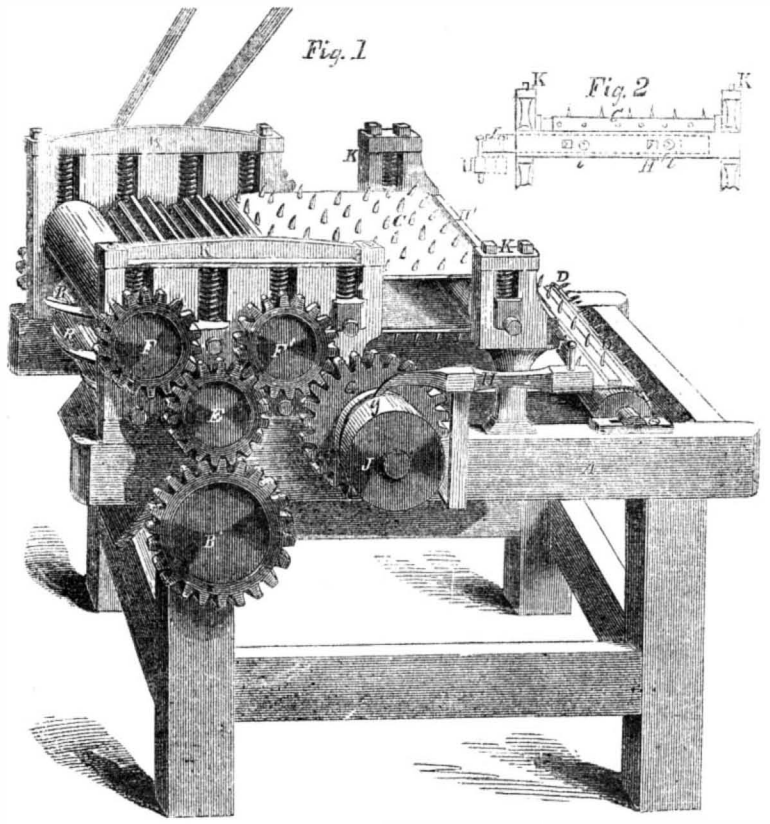
One important feature of the machine is but partly in sight in the main view, and is added above it at fig. 2. The principle features of the machine consist, 1st, in means for cutting off the nub or nubbin; 2d, in devices for carrying forward the ear thus treated, and for agitating and loosening the husks, and 3d, in powerful rollers slightly fluted. which seize all the loose parts and draw them through, grinding and cutting them fine by the same operation, while the ear of corn, being rejected by the rollers on account of its size and its smooth, hard character, is quietly dropped into a depository below.

The power may be of any kind, and may be applied at any point in the train of wheels. In the engraving it is applied to the shaft of the wheel, B, by means of a belt acting on a light and loose pulley on its further extremity. This gives motion to E, and this again to F and F', and also by gears on the further extremities to a roller between them. Both F' and the unletterred roller are fluted, though not as deeply as appears in the engraving, and both, in common with F, are kept down by stiff spiral springs as represented, upon the rollers, E and R below. These constitute the train of rollers which treat the fodder, the roller, R, being armed with knives to complete the operation, and discharge it finely cut.

There are two endless belts, the upper of which, C, is armed with spikes, the lower, D, is armed with both longitudinal slats and spikes. Both belts move in the same direction, and with different velocities, and serve to carry the corn forward, loosening the husks, and present it in such a manner to the fluted rollers that the latter are certain to deprive it of all the loose material before allowing it to fall through the narrow space remaining between them and the belt. The rollers which carry the upper bolts are also, as represented, pressed down by springs, so as to cause the belts to rub with some violence on the ear of corn in passing through, but these springs are much weaker than those on the boxes carrying F', etc.

The device for cutting off the butt or nubbin is a vibrating knife, I,—figs. 1 and 2. It is mounted immediately back of the cross bar, H This cross bar has two holes countersunk, so as almost to receive a full-sized ear

BRYSON'S CORN HUSKING MACHINE.

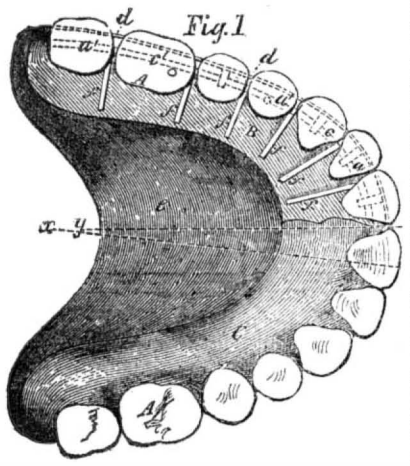


of corn, the hole being ample to admit the nub with the roots of the husks. The knife, I, is connected at its near extremity to the lever, H, and this lever is actuated by running in the oblique groove, *g*, in the surface of the pulley or cam, J, so as to receive a quick reciprocating motion.

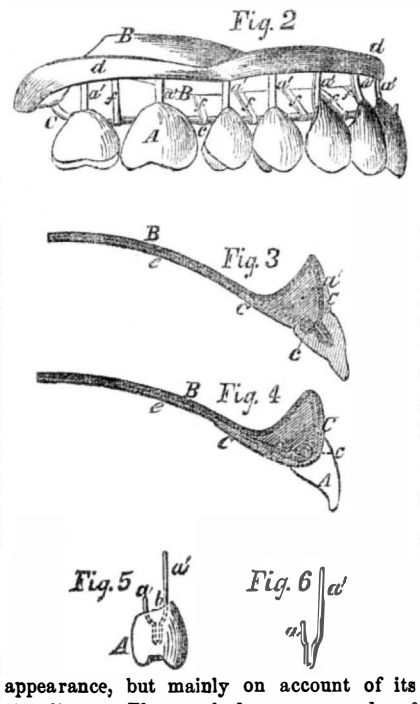
The attendant takes an ear of corn in each hand, presents them butt foremost to the countersunk holes and then drops them on the belt, to seize two more. The ears thus pass nearly endwise through the belts, and are thrust against the husking rollers, where they stand like rejected suitors, until by the continued agitation they are turned quarter around, and dropped through, a process which allows ample time for the rollers to seize and remove all the loose integuments.

Further information may be obtained by addressing the patentee, Mr. Robert Bryson, at Schenectady, N. Y., or Eliphalet Nott, D.D. President of Union College, same place.

Hayes' Method of Mounting Artificial Teeth.



Conspicuous among the many quite recent improvements in dentistry stands the construction of continuous or solid gums, for connecting the teeth with each other and with the plate, when a full set or any considerable portion of a set is supplied. Although the validity of the patent therefor has been, and still is, sharply contested, we believe the material manufactured by Dr. John Allen, of this city, composed of flinty substances which melt at a little less heat than the teeth, is the most popular for the purpose, as it is almost free from any disposition to contract, and thus to warp the plate when exposed to the intense heat required in the baking process. The old process still in vogue with many dentists, employs teeth having each a corresponding short portion of gum cast on it, ready for attaching to the plate by simple riveting, but, although it requires much greater mechanical skill in the operator, the really progressive men in the profession are now adopting the continuous gum, on account, partly, of its greater strength and superior



appearance, but mainly on account of its cleanliness. The patched up sets, made of teeth and gums in fragments simply riveted, are full of joints, forming cavities where food and saliva lodge and become offensive unless cleansed with extreme care, and it is obviously impossible, from its construction, ever fully to cleanse the narrow and crooked fissures thus made.

The improvement represented in the accompanying engravings, relate to methods of attaching the teeth to the plates by wires, etc., which are soldered before the gum composition is laid and finally covered by the same. The earthy composition of the gum is strong, but not sufficient of itself to hold the teeth with certainty in biting very hard substances, and even if it were, a connection of some kind is always absolutely necessary to confine the teeth in exactly the right positions until the composition hardens. We cannot be expected to teach the profession all the details for applying this invention, nor all the points of difference between this and other methods, but will endeavor to set forth its general features.

The heat necessary to consolidate properly the porcelain or earthen gums, forbids the employment of the usual metals in connection. Gold or silver, which melt at from 1800° to 2300° Fah., would be of no service as bands or ties, and even when used as solder for the quite unfusible platinum, melt and would, if used in any sensible quantities, flow away unless confined by the surrounding earths. In this invention platinum plates are used as a foundation, and platinum wires as the means of attaching the teeth thereto, after which the whole is nicely covered with the melted composition, taking care to fill all the interstices between the wires, and to apply the proper oxyds of gold, etc., for producing the proper pink tint natural to the real healthy gum, after which the whole is melted at a very high heat and turned out perfect.

Fig. 1 is a set of teeth represented partly supplied with the gum composition. Fig. 2 is a side view of the set before the composition was applied; fig. 3 is a vertical section through the same, the section passing through the center of a tooth; fig. 4 is a similar section between two teeth; fig. 5 is a tooth properly wired according to this invention before its introduction into the set, and fig. 6 is the wire (a flattened strip of platina) introduced in the tooth before it is baked. We may remark here, that these teeth, as well also as those above mentioned more generally employed, are manufactured on a large scale from a kind of porcelain, and sold to the profession, and are not, as supposed by many, made up on the spot where used, by the skill of the operating dentist alone.

Commencing with fig. 6, and proceeding backward, we may describe *a a* as the short bent wire introduced deeply in the base of each tooth in the course of manufacture. Fig. 5 is a tooth complete with the ends of the wire projecting. Figure 4 shows a tooth in place, B being a plate accurately swaged to correspond with the form of the gums and roof of the mouth, and *e* a smaller plate similarly swaged to cover the roof of the mouth alone. C is the earthenware material The little circle, *c*, shows a cross section of a stout wire which travels continuously around the whole set to steady them, and *f* is a brace stretching from *c* to D, and soldered to each Fig. 3 shows similar parts, but with the short end, *a* of the original tooth wire bent around and soldered to *c*, while the long end, *a'*, is extended up and soldered to B. Fig. 2 shows all the parts in place, and indicates, by the letter *d*, a kind of folded edge (equally visible on figs. 3 and 4) formed on the edge of B. Fig. 1 explains itself, and it is only necessaro to add that the additional plate, *e*, is soldered on, and the edge, *d*, is turned down, both for the same purpose, *i. e.*, to offer better facilities for joining the gum composition, earthenware, or porcelain, C, to the other parts by a perfectly smooth and flush joint, so that the set, when complete, shall be as nearly like the natural mouth as possible. Teeth thus set are much preferable to the old method on every account, and we believe usually cost considerably more.

For further information regarding this improvement address the inventor, George E. Hayes, Buffalo, N. Y. Patented Jan. 27, 1857.

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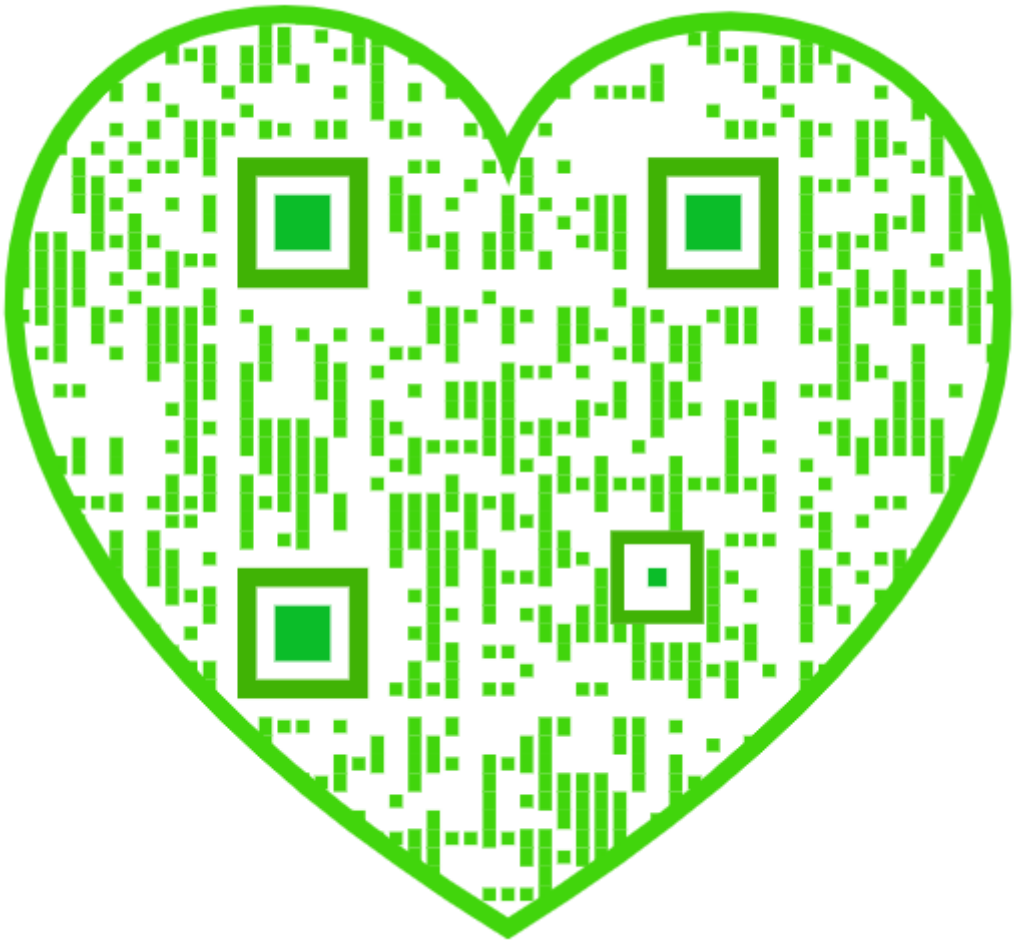

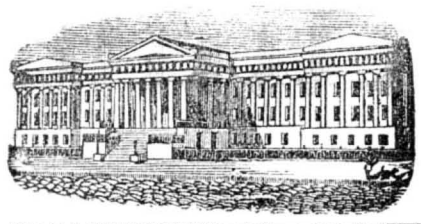

[Reported officially for the Scientific American.]

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING MARCH 3, 1857.

[Remainder of last week's issue.]

MACHINES FOR MAKING AXES—Chas. Hutchins, of East Douglass, Mass.: In the foregoing I have described three machines which are employed in the successive operations to produce axe polls; but I do not wish to be understood as making claim to the mechanical construction of either of the said machines, as substantially such machines have been used separately for other purposes, although under modifications which would not answer the purposes specified. Nor do I wish to be understood as limiting my claim of invention to the use of machines constructed specifically as described, as they may be modified in many respects, without essentially changing the mode of their operation by which they are rendered useful in the production of axe polls.

I claim the preparation of the bar or block of iron by longitudinal rolling between rolling dies operating substantially as described, to form it with a projection on one face in the middle of its length, and two projections on the opposite face, one at each end substantially as described in combination with the cross rolling between segment dies under a mode of operation substantially such as described, to reduce the thickness of the cheeks towards the edges, and to the required swell on the edges of the cheeks, substantially as described and for the purpose specified.

GRINDING CARD CYLINDERS—Jonathan Parker, of Biddeford, Me.: I claim the combination of the stop-motion or mechanism, or the feed mechanism, or that which produces the reciprocating traverse motion of the grinder, as specified.

SEWING MACHINES—S. F Pratt, of Roxbury, Mass.: I claim producing successive corrugations, or folds in the cloth, substantially in the manner described, for the purpose of feeding the cloth for the production of the stitches.

And I also claim the combination of the lifter spring, I, the nipper spring, K, the rod, H, and the flattening spring P, they operating together and upon the cloth, essentially as specified.

BEVELING AND JOINTING STAVES—Erastus M. Pitman, of Warren Co., Va.: I do not claim the reciprocating plane having reversed bits, or the manner of its motion.

But I claim the combination of the reciprocating plane, A, having reversed bits, c c', and the motion referred to, and the carriage, D, with the inclined ways, E E', constructed, arranged, and operated in the manner and for the purposes shown and described.

GENERATING STEAM—C. F. Pond, of Hartford, Conn.: I do not claim either singly or in combination the boiler pumps, steam chest, or the surrounding the same with steam or heated air; nor do I claim any part of said apparatus by itself, nor the generation of steam by bringing water, either in large or small quantities, in contact with metal, heated directly by fire.

I claim the method of generating steam from water introduced in numerous fine jets, and thrown upon heated metallic surfaces, substantially as described, when this is combined with the heating of the said metallic surface on which the jets of water are to be thrown to be evaporated, by the contact of steam, generated in a separate boiler connected therewith, for circulation and other purposes, substantially as described.

CENTRIFUGAL FRICTION CLUTCH.—Rensselaer Reynolds, of Stockport, N. Y.: I claim the employment in the combination substantially as specified, of the sector friction brakes sliding radially in the wheel or pulley which rotates before the clutching takes place, and usually termed the loose pulley that the other wheel or fast pulley may be clutched by the friction of the brakes due to the centrifugal force generated by the rotation, and by which they are forced onward against the inner periphery of the wheel to be clutched, as described, thereby clutching the parts by a force no greater than that due to the friction produced by the centrifugal force under the determined proportions, weight, and rotative velocity of the friction brakes.

LOCKS—J. Christian Reithmuller, of Pittsburgh, Pa.: I am aware that tumbler plates with notches similar to those described have been used before in locks, and I therefore disclaim distinctly the use of the same.

But I claim the peculiar arrangement of the tumbler plates, t t', in the box, F, viz., the tumbler plates projecting and receding alternately sidewise, their guiding grooves, f f' f f', in the box, F, being made accordingly deeper and shallower alternately, and also separating the tumbler plates by a small space, this whole arrangement of the plates, t t, being for the purpose of allowing each spring, h h, to act on its respective tumbler plate freely, without interfering with or disturbing the free play and action of the plates or springs adjoining.

And I further claim the providing of one of the tumbler plates with the tongue, r, and the recesses, s s', in the bolt tumbler, E, operating together as described, and for the purpose of securing the bolt tumbler, E, in its position when the lock is in its locked or unlocked state.

And I further claim the combination of the key and bit plate. I am perfectly aware that bit plates and keys of similar construction have been used before separately, and I therefore do not claim any of these parts when used separately.

But I claim the same, when combined in the manner substantially as described.

SOAP MIXTURE—Isaac Roraback, of the Parish of Caddo, La.: I claim the compounding of them in such proportions as to form a solid of suitable consistency which I believe excels any other soap in its suitableness for cleansing clothes of every description, and for toilet purposes generally, as well as in point of cheapness, convenience, and dispatch with which it is made.

WASHING MACHINES—Louis C. Rodier, of Detroit Mich.: I do not claim a washing machine having a flexible apron or jacket suspended upon springs, and partly enclosing a revolving cylinder armed with ordinary flutes.

But I claim the revolving cylinder, K, composed alternately of flanges, J, and spaces opposite said flanges, in combination with the jacket, G, arranged and operating substantially in the manner and for the purpose set forth

TIN PANS—E. F. Parker and J. Smead, of Proctorsville, Vt.: We claim a milk pan with a struck up bottom, and united to the side in the manner and for the purpose described.

PROJECTILES—Malcom Shaw, of Sandwich, Mass.: I am aware that double shells with separate chambers for explosive and incendiary materials have been used. I therefore do not claim such, independent of the devices combined therewith.

I claim the improvement upon this kind of shell, whereby I am enabled to use melted metal as the incendiary material, and which consists in lining the chamber of the incendiary material with some non-conducting and refractory substance, such as pipe clay, black lead, &c., and perforating the iron, to allow the escape of the gas therefrom, thereby providing against premature explosion, and retaining the heat in the melted metal

MOLD CANDLE MACHINE—Benjamin D. Sanders, of Holliday's Cove, Va.: I claim causing the wick centering slide, c, to stretch and hold the wick in the mold by its operation on the wick when bent over the slide, and said bent portion of the wick having the drawn candle attached or suspended to it in rear of the notched edge of the slide, essentially as set forth.

PORTABLE FIRE-ARMS—John Tilton and William Floyd, of Rock House, O.: We claim the combination of the levers, b and d, spring, f, and bridle, a, arranged and operating substantially as described, for effecting the simultaneous release of the trigger and removal of the muzzle cover.

PROJECTILES FOR RIFLED CANNON—John M. Sigourney, of Watertown, N. Y.: I claim recessing the cylindrical part of cylindro-conical shot and shells in such a manner that the contact of the said shot and shells with the bore and grooves of the gun be confined to the projecting ribs, D, and belts, A, which belts and ribs are finished to fit the bore and grooves with precision, substantially as set forth.

OPERATING SUPPLY AND DISCHARGE VALVES OF HYDRAULIC ENGINES—Homer H. Stuart, of New York City: I claim arranging the four flap valves on the rock shaft, R, to operate in the separate compartments of the two valve boxes, placed at one end of the cylinder, and operating the same by means of the sliding arch piece, G, connected with arms at opposite ends of the said rock shaft, R, and driven by the vibrating arm, D, of the main rock shaft, B, of the engine, substantially as set forth.

[The engine to which this invention chiefly applies is the semi-rotating or vibrating piston variety, like the well-known steam engines of the war steamer "Princeton." The valves receive their motion from an arm on the end of the main rock shaft, B, and are worked very suddenly, and by a motion beautifully adapted to this class of engine.]

CAST IRON PAVEMENTS—Chas. J. Shepard, of Brooklyn, N. Y.: I do not claim double inclines in themselves, as wooden paving blocks have been formed as pairs of double wedges set in alternate opposite directions. But I am not aware of any metallic paving block having ever before been formed in a polygonal shape with the vertical or nearly vertical sides to steady the blocks, and with the inclines around the upper parts of said sides taking projections from the adjoining blocks, which projections are unequal distances from the angles of the blocks to prevent any two coming opposite to each other, when laid as specified.

I claim forming polygonal metallic paving blocks with the inclines, 2 2, at the upper part of the straight sides and with the projections, 3 3, to take the inclines of the adjoining blocks at unequal distances from the angles of said block, substantially as and for the purposes specified.

HUSKING CORN—Hiram Strait, of Covington, Ky.: I claim the toothed drum, D, with its projecting saw or knife, K, and cam, X, in combination with one or more ear holders, V I H, arranged substantially as specified.

I also claim the ear holders, V I and H, when constructed and arranged substantially in the manner specified

DOOR SPRINGS—Leopold Thomas, of Allegheny City, Pa.: I do not claim the use of the spiral spring, c, nor the roller, b.

But I claim the use of compound lever, g h, in combination with the connecting arms, K K, and spiral springs, c, or their equivalent, in the manner and for the purposes set forth.

MELODEONS—Thomas F. Thornton, of Buffalo, N. Y. I claim the combination of an extra adjustable lever, E, with each of the push-down pins, b 2, in the manner substantially as described.

[By pulling a knob, both banks of keys are united, so that quadruple notes will be sounded by playing upon one set of keys. There is an arrangement within for accurately adjusting the keys. The above couple is simple in construction, easily applied, effective, and durable. We regard it as a valuable improvement.]

GUIDE WHEELS FOR R. R. CARS—Jno. B. Wickersham, of New York City: I do not claim guide wheels, as these have before been used against the inner sides of the track. But I am not aware that said guide wheels have ever before been used in connection with a grooved rail, thereby lessening the liability for the car to run off the track, as set forth, when said guide wheels are each provided with a separate attachment for allowing of their rise and fall independently of each other, to pass any obstructions, as specified.

I claim the guide wheels, D D, at the front and rear ends of the car, when combined with the grooved rail, and attached to the car, in the manner and substantially as and for the purposes specified.

HARVESTERS—David Watson, of Newark, N. J.: I do not claim separately an endless apron for discharging the cut grain from the platform, for endless aprons, and in some cases gates, have been previously used for the same purpose

But I claim the gate, J, in combination with the inclined endless apron, I, and platform, H, when arranged and operated in the manner and for the purpose specified.

[In this harvester provision is made for discharging the cut grain from the platform in sheaves or gavels, and also for regulating the size of the sheaves. It also provides for attaching the finger-bar to the main frame of the machine in such a manner that the sickle is allowed to rise and fall, and thus to conform to the surface of the ground, and pass easily and safely over obstructions.—The gate is ingeniously arranged to be easily operated by the driver at will, so that the gavels or sheaves may be always of the proper size, whether the grain be thick or thin.]

SEED PLANTERS—Firman Goodwin, of Astoria. N. Y.: I claim arranging the seed hoppers and seed cylinders, and the mechanism which operates the seed cylinders upon movable bars, D, in combination with the double crank, J, and frame, A, in the manner and for the purpose set forth.

[See engraving and description of this invention on another page.]

HULLING AND SCOURING WHEAT—Joseph Weber, of Braysville, Ind.: I do not claim a polygonal surfaced drum or cleaning chamber having a roughened series of projections or a roughened surface, for I am aware such have been used for many purposes.

I claim, first, the polygonal chamber, A, when made substantially in the manner described, so that the grain will be turned over and over during its descent through the chamber, and be rubbed without being broken.

Second, The curved and notched arms, a a, in combination with the polygonal chamber, A, when constructed and used for the purpose described.

Third, The combination and arrangement of the polygonal chamber, A, curved and notched arms, a a, and the smooth triangular arms, c c, as and for the purposes described.

VALVES FOR STEAM ENGINES—Norman W. Wheeler, of Cincinnati, O.: I do not claim actuating simultaneously the induction and eduction valves by means of steam derived from the working cylinder. I do not claim the passage of the piston over the exhaust port at the termination of a stroke, when the object is merely to cushion and arrest the motion of the piston.

I claim, first, actuating the release valves of a steam engine by means of steam pressure derived from the working cylinder, and released therefrom by the passage of the working piston over and beyond appropriate ports, when the receiving valves are actuated by other means substantially as described, or in any equivalent way.

Second, Actuating the receiving valves of such engine by means of the differential pressure of steam flowing into the steam cylinder, when the resistance to be overcome arises in whole or in part from steam pressure upon one of a pair which are connected together substantially as described, or in any equivalent way.

Third, Opening the exhaust passages into the cylinder near each end thereof, but within the stroke of the piston, for the purposes set forth.

Fourth, Connecting puppet valves together in pairs, so that steam pressure upon the one which is closed will hold its fellow open as set forth.

PLATES FOR FIRE PLACES AND GRATES—F. E. Pitts, of Nashville, Tenn.: I am aware that grated, reticulated and perforated plates, (the last being described in the patent granted to Jacob Cohen, April 15, 1850,) have heretofore been used in the throats of fire places or flues of stoves, also that a fire back composed of metallic plates arranged like the slats of a window blind, is described in the patent for a cooking stove granted to G Smith and H. Brown, May 15, 1847. I claim none of these, I am also aware that it has been proposed to place a grate with angular bars similar to mine in the flues of cooking ranges. I do not claim the plates so placed,

I claim the back plate for fire places and grates, constructed with the series of angular ridges, furrows and slots, in the manner and for the purposes described.

AGING LIQUORS—Anson Wolcott and A. Spencer Wolcott, of East Bloomfield, N. Y.: We claim the employment of swinging shelves, or their equivalents, for the purpose of gently agitating the liquors, while they are exposed to a moderate heat substantially as described.

[Wines and liquors are in general esteemed in proportion to their age. Various expedients have been resorted to for giving to liquors "age" more rapidly. In ancient times the wine was placed in skins, and hung up in the smoke of a fire, where it would receive a gentle heat. A constant movement of the particles of the liquid was thus occasioned, and the qualities due to age were obtained in less time than when not exposed to warmth. The mode frequently adopted of late years to obtain "age" in the least period of time is to put the liquors on board of ships, and send them on voyages through the tropical climates. The gentle undulations of the sea combined with the heat of the atmosphere in the tropics give both motion and warmth to the liquids by which their qualities are sensibly improved. In other words, "age" is thus imparted to them, and liquors are increased in price in proportion to the number of times they have crossed the equator. Messrs. Walcotts' improvement consists in subjecting the liquors to what may be termed an artificial sea voyage. They place the liquor upon shelves, which are gently swung to and fro the apartment being suitably heated and kept dark. Heat and undulation are thus conveniently communicated, and the desired "age" is obtained in much less time than by any other known method. This improved process continued for one year gives a value to the liquors which requires four years' time to attain by the ordinary means.]

METALLIC ROOF—Wm. E. Worthen, of New York City: I claim a roof composed of U shaped metallic beams, which themselves are a portion of the covering, and of arching metallic plates, plain or corrugated, connecting said beams, and composing the rest of the covering, the whole being constructed substantially in the manner described.

REFLECTORS FOR LOCOMOTIVES AND OTHER LAMPS—Isaac Carleton, of Brooklyn, N. Y., Assignor to John Wybird, of Baltimore Md.: I make no claim to the passing of an air tight tube through the reflector, separately considered, nor do I claim protecting the reflector by a glass, conforming to its surface and hermetically sealed at the chimney openings and the rim of the reflector as shown in the patent of Alonzo Farron, dated April 14, 1844.

I claim the air tight glass cylinder. B, passing through the reflector, in combination with the glass, G, hermetically sealing the mouth of the reflector, arranged and operating substantially as and for the purpose set forth.

MASTIC ROOFING MATERIALS—N. A. Dyar, of Lynn, Mass., Assignor to himself and Seth D. Woodbury, of same place: I claim the employment of sulphuric acid (or an acid having a similar effect) in the treatment of substances or compositions containing hydro-carbons, in the manner and for the purposes essentially as described.

FLUXES FOR TREATING ALLOYS—Elie Mourier and Jules Francois Edward Vallent, of Paris, France, Assignors to Henry Migeon, of New York City. Patented in France Dec. 30, 1851: We do not claim making an alloy of copper and zinc or tin, as this is well known, and we do not limit ourselves to the precise proportions specified of non-metallic chemical substances used with said metals during the process of refining as said non-metallic substances may be slightly varied according to the quality of metal operated on, so long as substantially the same effect is produced on the metal by the ingredients specified, or others having equivalent properties.

We claim the employment, in combination, of the non-metallic substances, substantially as specified, or substances having equivalent properties in the refining of copper and its alloys, whereby the essential qualities specified are imparted to the copper or its alloy.

SEEDING MACHINES—L. B. Myers and H. A. Myers, of Massillon, O. Assignors to themselves and Isaac Myers, of same place: We aware that rollers, valves and slides have been used in seed drills for distributing the seed, therefore, being old devices we do not claim them.

Neither do we claim an aperture, nor two piston heads on one rod separately.

We claim measuring and distributing grain seeds or fertilizers, by two or more piston heads, and one rod or their equivalents operating in and out of an aperture in the manner and for the purpose substantially as described.

SHIPS STEERING APPARATUS—J. B. Holmes, of New York City, Assignor to J. R. Pratt, of same place: I do not claim the manner of moving the rudder by means of a rack and pinion operated by gearing.

I claim, first, the arrangement of a pinion on the end of the tiller working into a stationary curved rack attached to the deck of the vessel in connection with a friction roller working against a smooth stationary surface to prevent the rudder from being pressed out of its place, in the manner substantially as described.

Second, I claim the arrangement of attaching the pinion to the end of the tiller, in connection with a beam in such a manner as to be able to move said pinion further into a stationary rack by the action of said lever for the purpose of producing a friction sufficient to hold the rudder thereby in any desired position, at the same time to lock the gearing to prevent any back lash on the steering wheel.

SHIPS' CAPSTANS—J. B. Holmes, of New York City, Assignor to J. R. Pratt, of same place: I claim the vertical recesses, C, and welps extending the whole length of the barrel of the capstan, and allowing of two or more turns of the cable around the capstan as set forth.

SWAGING IRON—Junius Foster, of Brooklyn, N. Y., Assignor to John Herbold, George Kuhn and Junius Foster, of same place: I claim adjustable block, f, and rollers, h and i, set on and moved by the lever, g, when combined with the pattern, c, and flanch, l, the whole constructed and operating substantially as specified.

NAUTICAL ALARM—E. L. Seymour, of New York City, Assignor to J. G. Wright, Chas. Wright, and H. I. Geyer, of same place: I claim the combination of frame, rods, hammers, axles, springs, pendulum, levers and gongs or bells, substantially as above described, to be placed upon buoys, floats or vessels of any kind, for the purpose of causing alarms and giving warning of rocks, shoals, or other dangers upon the coast or at sea, and I do not mean to confine myself to any particular materials in the construction of the same nor to the placing of the ring, levers and springs above or below the center of oscillation, but to vary the position of the same, and of the gongs, and their number, as I may deem desirable, so long as I adhere substantially to the description.

REDUCING AND SMOOTHING BOARDS TO UNIFORM THICKNESS—Tristram D. Knight, of Charleston, Tenn.: I do not restrict myself to the cylindrical form of the grinder, as the disc or some other form might, under certain circumstances, be substituted with advantage.

Neither do I confine myself to the use of an emery grinding surface, as many other things are well known for abrading and polishing wood, which might be employed in the place of emery; and as an example I will mention rasps and files, but the variety of such thing is too well known to require special enumeration, and too numerous to be particularized in a specification.

I claim the combination of the reducing saw, with the finishing grinder, for the purpose described.

POINTING AND THREADING SCREWS—D. M. Robertson, of Manchester, N. H.: I claim a pointing tool, arranged in connection with one or a series of threading tools, and traversed slower than the threading tools, and so far in advance of them as to form the point of the screw blank, and prepare it for the threading tools substantially as described; and I make this claim whether the pointing tool is traversed by the devices described, or by such other devices as will answer the purpose.

I claim the plate or guide, A 2, when made to traverse, substantially as described, whether it is operated by the devices described, or such others as will answer the purpose.

I claim the guide or rest, W, when made to traverse substantially as described, whether it is operated by the devices described, or such others as will answer the purpose.

RE-ISSUE.

BREECH LOADING FIRE ARMS—B. F. Joslyn, of Worcester, Mass. Patented Aug. 28, 1855. I claim a cone headed pin, with two or more expanding rings, substantially as shown and described for the purpose specified and in making the exterior of a breech pin, as described; cone shaped for the purpose as above set forth; also, combining the same with the radial or hinge breech, substantially as shown and described.

ADDITIONAL IMPROVEMENT.

LOOMS—J. O. Leach, of Ballston, N. Y. Patented Oct. 30, 1855—Additional improvement, July 8, 1856: I claim the change in the relative position of cams 2 and 4, 6 and 8, in the manner and for the purposes substantially as set forth.

THE FOLLOWING WERE ISSUED FOR THE WEEK ENDING MARCH 10, 1857.

STOP-MOTIONS FOR STEAM ENGINES—John T. Ackley, of Philadelphia, Pa.: I claim the rod, G, with its nuts, e and e', in combination with the spring lever, H, having two fulcrums, h and i, and the spring catch lever, L, the said rod, G, being operated—in case of accident—by the cross head of the steam engine, or other convenient working part of the same, and the said catch lever, L, being connected to the eccentric rod, or to a stop valve in the steam pipe, and the whole being arranged and constructed substantially in the manner and for the purpose set forth.

CUT-OFFS OF STEAM ENGINES—John F. Allen, of New York City: I claim, first, the arrangement of the sliding cut-off valves, A A', to work on a separate seat arranged inside of the seat of the main valve, and having a precisely similar arrangement of ports to the seat of the main slide valve, substantially as described.

Second, Though I do not claim the closing of the cut-off valves by steam pressure, I claim the foot pieces, k k', and levers, l l', attached to opposite ends of the main slide valve, and operating in connection with pistons, E E', that are attached to the cut-off valves, and work in cylinders connected with the main steam passages, and with spring catches, J J', that retain the said pistons and adjustable sliding pieces, n n', or their equivalents, substantially in the manner specified.

[This invention may be adapted to any slide valve engine at present in use, at small expense, using the same steam chest and slide valve. It is, on this account, one of the most desirable of the many inventions lately developed for cutting off the steam instantaneously, and hence without any previous unnecessary contraction of the passages at any point between the commencement of the stroke and the half stroke of the piston. It would add greatly to the economy of most engines now running.]

GRINDING SAWS—Emanuel Andrews, of Elmira, N. Y.: I claim connecting the saw to the mandrel by the ball joint, for the purpose of adjusting it to the position of the rollers while being operated on by the stones, whether these act conjointly or independently, and to prevent straining the saw, as specified

Second, the plate, g, for the purpose of allowing me to guide and grind a saw even in thickness, regardless of its hard or soft parts, thus perfectly balancing the saw, as set forth and described.

FELT CLOTH—Geo. C. Bishop, of Norwalk, Conn.: I claim, in contradistinction from forming a bat for felt cloth, by carding from laps, a bat made from ropings or rovings, carded and formed substantially in the manner described.

PLATES FOR TEETH—A. A. Blandy, of Baltimore, Md. Ante-dated Dec. 11, 1856: I claim casting the plates of artificial teeth of an alloy, substantially as described, suitable for such a purpose from its chemical and physical properties, and that practically will not shrink or expand in solidifying.

PUMP—J. F. Brickley, of Winchester, Ind.: I claim arranging a rod in connection with the valve of the pump so that said valve may be closed or opened at pleasure by the user, for converting an ordinary lifting pump into a lifting and forcing pump, or vice versa, as set forth, and for the purpose explained.

MELODEONS—Riley Burditt and Hatsell P. Green, of Brattleboro, Vt.: We do not claim to be the first inventors of musical instruments in which two or more notes in different octaves are sounded by pressing a single key, for we are aware that organs, melodeons, pianos, &c., having such features have long been known; the patent of Whipple & Bowe, 1855, is an example in point. In their instrument each set of connecting levers has its own fulcrum board, one of said boards is hinged and rendered movable, so that its set of levers may be thrown in or out of connection with their corresponding keys by raising or lowering the fulcrum board.

The employment of double fulcrum boards involves increased expense in construction, and want of compactness. Besides, the end connection between the levers and the keys require to be flexible, to a certain extent, which is expensive, lacks accuracy, is liable to become loose, cannot be adjusted readily, nor conveniently removed or applied to the instrument.

But, by our arrangement, the levers are all fulcrumed on one and the same fulcrum board, which slides, and thus brings the levers into or out of connection with the keys. Our plan is simpler, more compact, cheaper, and more easily applied than the invention above described. The ends of our levers are united by means of ridged adjusting screws, by which the levers may be adjusted with the utmost accuracy and convenience. But we do not claim such adjusting screws, as they are seen in J. F. Thornton's device, 1857.

Our fulcrum board and levers may also be removed or replaced readily, without the necessity of putting the end of each individual lever, one by one, into its loop by hand, as in Whipple & Bowe's device.

We do not claim the combination of levers with push down pins, that have shoulders or collars upon them. This is seen in H. N. Goodman's melodeon, patented 1853.

Neither do we claim any part or feature of the described invention, which is seen in any other analogous instrument; but to the best of our knowledge and belief it is new to have all the levers fulcrumed upon a single movable board as set forth.

We claim having the fulcra of the connecting levers, B B, located upon a single movable board, C, substantially as described.

[This is a simple and very effective improvement.]

ROCK DRILLS—Thos. H. Burridge, of St. Louis, Mo.: I claim the combination of the sliding head, N, with the ratchet guide piece, M, bumper, O, spring, R, rod, b, and drill bar, A, A', when said parts are constructed and arranged for joint operation, substantially as set forth.

HARVESTERS—Hiram Clark, of Rochester, N. Y.: I do not claim double cutter bars; nor an advancing and withdrawing stroke.

But I claim giving to each of the cutting bars, alternately, an advancing upward stroke against the grain, as specified.

HARVESTING GRAIN—Geo. R. Crane, of Caldwell, N. J.: I claim operating the bars, M N, to which the rake teeth, a, are attached, from left to right, by means of the straps, O O, roller, P, cord, f, and spring, Q, when the same are constructed and arranged, in relation to each other, within the divider or shield, X, in the manner and for the purpose set forth.

WIRE ROPE—Joseph Cushman, of Racine, Wis.: First I claim the arrangement of the two sets of reels, e and j, in combination with the carriage, E, whereby the strands may all be adjusted and drawn out to the proper length simultaneously, as set forth.

Second, I claim the swinging arms, m, in combination with the traveling top, H, when constructed, arranged and operating in the manner substantially as and for the purposes set forth.

RAISING OR LOWERING FARM GATES TO ALLOW THEM TO PASS OVER OBSTACLES—Dennis E. Fenn, of Tallmadge, O.: I claim the section, H, with the slot, h, spring, J, stud, g, section, I, arm, I', and the notched plate, K, when arranged and operating substantially as described, for the purpose set forth.

I also claim the slide, E, and pawl, E', when combined in the manner and for the purpose set forth.

OPERATING SAW MILL DOGS—Geo. W. Hearn, of Princess Ann, Md.: I make no claim to operating the head blocks from the movement of a single ratchet wheel.

Nor do I claim the separate movement of the head blocks.

But I claim the longitudinally moving shaft, S', in combination with the shaft, S, and the clutches, f f', arranged and operating as specified.

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ESCUTCHEON FOR KEY-HOLES—Edmund Field, of Greenwich, Conn.: I do not claim the broad idea of jointing metallic or other bars by means of hinges or pivots, as this is everywhere well known.

But a key-hole drop made in two parts, pivoted together has never before been known. It is a new article of manufacture, possessing virtues and advantages not seen in any other article of the kind.

I claim the key-hole drop, C, composed of two parts, b c, pivoted together.

[Many of our best locks are fitted so that the face of the key-hole is recessed or sunk some quarter inch or more below the general plane of the surface of the door or chest. This construction is stronger and more elegant than to have the key-hole flush, but it does not admit of an escutcheon in the usual form, as there is not room within the recess for such to be turned aside. This simple invention provides a hinge in the escutcheon, and thus completely surmounts the difficulty.]

COILING STEEL SPRINGS—Perry G. Gardiner, of New York City: I claim, first, the cone mandrel, c d, constructed in two pieces, so that the spiral cone will slide off and upon the straight part of the mandrel, the straight part having the slot or groove, and being an eccentric, so that one edge of the slot will be lower than the other, and gradually rising round to the other edge or side of the mandrel, as above described.

Second, the construction and arrangement of the sliding frame, T, for carrying or feeding up the steel plate upon the cone mandrel, and having attached to it the table, Q, self-adjustable to any required inclination, for supporting and holding the steel plate while being drawn in upon the mandrel, and sustaining the adjustable rollers, n', n, with their adjustment, to suit any required thickness of the steel plate.

Third, the arrangement of the loose or sliding pressure roller, U, so as to have the lateral motion upon the axle, b, by means of the arms, V V', attached to the sliding frame, T, and the simultaneous graduated downward movement to press and guide the steel plate upon the spiral cone.

Fourth, the combination of the sliding frame, T, and the parts attached to it, and the pressure roller, U, and the intermediate guide plate, 18, with the cone mandrel, c d, arranged and operating in a direct motion, or reversed, as described,

Fifth, the arrangement by which the wheel, G, is thrown in and out of gear, so as to connect or disconnect the shaft, L, with the shaft, S', by which connection or disconnection may be made by hand or by the operation of the machine itself, at the proper moment, in the manner and by the means above specified.

SHEARING STEEL PLATES—Perry G. Gardiner, of New York City: I claim the arrangement of the movable bracket plate, M, so as to adjust the lower steel cutter, q, to the upper steel cutter, a f, as required, the adjustable stop or guide plate, f m', and the guide bars, q and r, upon the tables attached to M, and the eccentric lever, S, the whole combined, arranged, and operating in connection with the shears, in the manner and for the purposes above described.

LUBRICATORS FOR STEAM ENGINE CYLINDERS—John Henwood, of New York City: I claim the piston, B, having the oil cup attached by a hollow stem, and provided with a valve, j, working in an oil cylinder, C, that is provided with an arrangement of passages, e f f, substantially such as described, leading to the steam cylinder, valve-chest, or other part to be lubricated, and with a cock, having an arryngement of passages, e f f h k, to correspond with said passages from the oil cylinder, the whole operating substantially as specified.

[This is, in effect, a very simple and easily worked pump for the important purpose of injecting oil to any part when opposed by pressure. The small piston is raised by hand, and the small cylinder fills very naturally with oil, after which, by turning a cock, the pressure of the steam or other fluid is made to act above the piston, and thus to aid in forcing the oil to the place desired.]

NIPPLES—Wm. Cleveland Hicks, of New Haven, Conn.: I claim my improved nipples (two or more prongs with or without hooks, for withdrawing loaded balls or cartridges from breech-loading fire-arms, as described) for the purpose of igniting percussion and discharging loaded balls or cartridges.

And secondly, my method of using one, two, or more nipples, or prongs, with hooks as described, to withdraw cartridges or loaded balls from breech-loading fire-arms, by causing said hooks to indent or spring the rim of a cap or primer, as described, and by catching hold of said rim, to withdraw the loaded ball or cartridge by the act of drawing back the nipples, all substantially as described and specified.

ENAMELING CAST IRON—Geo. W. Holley, of Niagara, N. Y.: I claim the process of covering the skeleton or core plate and core rod, in the manner described, with the compound or composition with which it is proposed to coat or cover the iron, and then pouring the melted iron on or around said compound or composition, and melting or softening the same so that it will adhere to the surface of the iron as it becomes cold.

The same process may be used for coating or covering copper, brass, and other metals.

FIRE-PROOF STONE—Thos. Hodgson, of Brooklyn, N. Y.: I claim the useful manufacture of a fire-proof artificial stone composed of felspar, mica, and quartz, and the other substances or materials described, in the manner and for the purpose set forth.

[This is a readily molded stone, intended as a substitute for plaster and stucco work, for architectural ornaments. The material is pulverized granite, sulphates of lime, zinc, and iron, also starch and tannin, peculiarly wetted and mixed, and allowed to stand a few minutes in an oiled mold. We shall recur to this again.]

WOODEN CHAIR SEATS—Edwin, Artemas, & Cheney Kilburn, of Burlington, Vt.: We do not claim a wheel having its periphery or face coated with sand or emery, for such wheels have been previously used for polishing.

But we claim shaping or hollowing out the faces or upper sides of chair seats by means of a grinding or cutting wheel, D, when said wheel has a convex face or periphery coated with sand, emery, or other suitable substance, and using in conjunction with said wheel, the screw, f, or its equivalent, with the circular plate or disk, h, attached, substantially as described.

[This invention presents increased facilities for what is one of the most important of our wooden-ware manufactures. The screw alluded to urges the chair-seat properly against the wheel. The whole is much simpler than the machines heretofore in use for the purpose, and the surfaces produced require no sand-papering.]

HYDRAULIC JACK—Geo. Lindsay, of New York City: I do not claim the device or arrangements of the pumps or working parts, or the safety and lowering valve.

Nor do I claim the device or arrangements of the piston rod, H, or of the ram, D.

But I claim the arrangement of them all combined as constituting the specific whole machine, as shown and set forth.

[The great merit of this over the admirable jack pumps before in use, is its ability to serve either as means of directly forcing apart or of as directly and conveniently drawing together. Hooks are provided for this latter end, and a new implement is thus produced of great practical value in many situations.]

CARRIAGE SPRINGS—Chas. A. McElroy, of Delaware, Ohio: I claim the springs, o, pivoted as described, and stirrups, n, all arranged and operated in the manner and for the purposes set forth.

STEAM SPADES—G. M. Ramsay, of New York City: I claim the alternate spades, J, in combination with the double crank shafts, I, constructed, arranged and operating substantially in the manner and for the purpose set forth.

GUARD FOR BREASTPINS—J. M. Ross, of Springfield, Mass.: I claim the additional guard, g h, as applied in the manner and for the purposes substantially as set forth.

CUTTING SCREWS—Thompson Newbury, of Taunton, Mass.: I claim the jointed elevator passing through the bottom of the feed pan, substantially as set forth.

I claim the vibrating slotted guide piece, fixed to the carrier shaft, operated by arm, M, and pin, n, as set forth.

I claim giving the threading tool, for the purpose of pointing the blank, a motion independent of and slower than that required to effect the threading, substantially as set forth.

I claim the catch wheel, C', with it pawl and stop, in combination with the leader worm, T, as set forth.

BENDING SHEET METAL—Daniel Newton, of Southington, Conn.: I claim the application to double seaming machines, of a roller, containing an angular groove, in which the seam runs in the first revolution, substantially as described.

CARPENTERS' PLANE—Oldin Nichols, of Lowell, Mass.: I claim connecting the cap, D, to the plane iron, C, by the hook-headed bolt, E, with two nuts, F and G, thereon, to hold them together, and then securing the iron to the plane stock, A, by a cam shaft, H, operating upon this same hook-headed bolt, which is so adjustable as to be lengthened or shortened, that any desired pressure may always be had to firmly hold the iron to the stock, by turning the cam shaft, and still allow the plane iron to be moved in or out of the plane, to cut a thick or thin shaving without further tightening or loosening it; these parts being arranged and operated in the manner and for the purposes fully set forth.

I also claim the plate, g, secured to the plane stock, and intervening between the surface, a, of the hook, E, and the surface, e, of the cam shaft, H, to prevent wear of the hook and cam, and also to prevent the hook, E, and plane iron, C, from sliding back, when the cam shaft, H, is turned to tighten the iron to the plane stock, essentially in the manner and for the purposes fully set forth.

I also claim the application of one single handle, B, to answer for and be secured to a whole set or any number of plane stocks, either in the lower or elevated position, and changeable from one position to another, or from one plane to another, instantly, and be secured firmly thereto, by means of the hook, K, and cam, L, or their mechanical equivalents, arranged and operated essentially in the manner and for the purposes fully set forth.

PREVENTING DUST, ETC., FROM ENTERING THE WINDOWS OF RAILROAD CARS—Philip M. Pyfer, of Baltimore, Md.: I claim the arrangement of rotary fans, D D, or their equivalent, upon the outside of the body of the car, when employed in conjunction with the windows thereof, substantially in the manner and for the purposes set forth.

VALVE GEAR OF DIRECT ACTION STEAM ENGINES—J. P. Ross, of Lewisburgh, Pa.: I claim the elastic lever, I, applied and operating substantially as described in combination with the oscillating yoke, H, the traveler, p, and the roller, r, or its equivalent, for the purposes set forth.

[By direct acting engines in this claim is meant those which have no crank motion or balance wheel, but reciprocate directly, as in many pumping and blowing engines, and in some saw mills. The elastic lever and yoke give just sufficient lead, and yet ensure a full opening to the valve. This is an improvement in the engine illustrated in page 44 of the present volume.

FLUID GATES OR FAUCETS—J. W. Smith, of Hartford, Conn.: I claim the slide, A, guided, secured and made adjustable, as described, by the screw pin, D, and nut, e, having a guiding flange, d, to travel within guide strips, f, when the same are used in connection with an soperating lever, E, loosely connected by recess, g, with said slide, for the more convenient removal of the parts and retention of the slide in case of breakage of the lever, and for the more free and independent operation of the parts, and so that the one bolt, D, holds the slide, without the aid of the lever.

I also claim, in the combination of the lever, E, and slide, A, or therewith, the fulcrums, i and k, at different distances from the center of the slide and slotted arm, h, for operating in the manner and for the purposes substantially as set forth.

CHUCK FOR WATCHMAKERS' LATHE—Wm. Stephens, of Richmond, Ind.: I am aware that a chuck has been invented to be used in connection with cement for holding the shaft and wheel: but these chucks will only allow concentric pivots to be turned. I would remark that by my improvement the ends of shafts may be drilled, either concentrically or eccentrically, to allow pivots to be fitted in the ends of the shaft, in case the former pivots of a shaft are broken off. This cannot be done in the usual lathe, nor by any tool used by watchmakers,

I do not claim, separately, the sliding or adjustable jaws, D D, for they have been previously used in chucks, but I claim the sliding or adjustable jaws, D D, in combination with the sliding or adjustable back center rod, C, arranged substantially as described for the purpose set forth.

[This is a valuable improvement in the facilities for this fine branch of work, but cannot well be further explained without the aid of drawings. This chuck is particularly adapted to the watchmaker's lathe by the same inventor illustrated on page 233, vol. 10.

TABLE GUAGE FOR CIRCULAR SAWING MACHINES—M. B. Tidey, of Ithaca, N. Y.: I claim the construction of a portable saw guage for the purpose and in the way substantially set forth.

SUPPORTING THE TONGUES OF COACHES—Z B. Wakeman, of Beloit, Wis.: I desire the use of the brace or braces, or their equivalent, attached to the reach, (or perch,) of a wagon or other carriage, in combination with a spiral spring, or spiral springs, applied to the tongue of a wagon, or other carriages, and pressing against the reach, for the purpose of giving direction and steadiness to the tongue, by checking its motion sidewise, keeping it in a straight line with the reach, (or perch,) while it supports it, and also preserves the set of axle in its true position, as set forth in the specification.

But I do not claim a patent for raising or sustaining the tongue, in itself, as this has been done before in various ways; but I claim the arrangement and combination of parts as set forth for the purpose of giving direction and steadiness to the tongue while it supports it.

Nor do I claim said parts, or any other arrangement or combination of parts, not used or described in this specification.

BOMB FOR KILLING WHALES—N. Scholfield and Wm. W. Wright, of Norwich, Conn., Assignors to N. Scholfield aforesaid: We are aware that the use has been applied to bombs, by being inserted in a pipe, and molten metal afterwards poured in the end of the pipe around the fuse to encompass and hold it tightly, and other modes of fastening the fuse have been adopted; but we do not claim the mode here referred to, or any heretofore used, nor do we claim the application of metallic wings or feathers to govern the direction of a projectile. We claim—

First, Inserting the end of the fuse through a short holding pipe, or collar, G, and securing it firmly therein by compressing the same, and the drawing or forcing this within the end of the fuse pipe, having a conical enlargement at its rear end.

Second, Enlarging the end of the fuse cord, by winding it with twine, or its equivalent, so that it cannot be drawn through the pipe, and inserting it in the fuse pipe, either with or without the fastening pipe, e, and putting gypsum, brimstone or wax around it, within the nut, A, to hold it securely.

Third, We claim the application of the sliding collar, h, on a projectile carrying a cylindric metallic plate covering the projectile, and either slit, to form wings, k, or unslit as a cylindric case, and so constructed that the said collar, with the case, or wings, shall slide to the rear, after being discharged from the gun, either by the action of a spring, or the resistance of the air to guide its direction.

Fourth, We claim so constructing and applying these wings, k, that they may coincide with the cylindric surface of the projectile while in the gun, and that their rear ends may be thrown up therefrom, by their elasticity, after being discharged, so as to stand in positions diverging from that surface, in the rear, substantially as described.

GRAIN CRADLES—S. D. Warren, of Lebanon, Ala.: I am aware that the fingers of cradles have been "gathered." I do not, therefore, claim the principle of so doing, but I claim the combination of the standards, C D F, fingers H and speed A, when so made and united, so that by the bar G, said fingers may be gathered or adjusted as set forth, and for the purposes explained.

CIRCULAR SAWING MACHINE—G. P. S. Wardwell, of Lake Village, N. H.: I claim the arrangement of two or more saws or cutters in a swinging frame, so that either saw or cutter may be brought into a suitable position for action, while at the same time the other or others shall be removed from the way, in the manner specified, or in any equivalent manner; and this I claim, whether or not a central or axial saw, or cutter, is combined therewith, or with a single swinging saw or cutter.

HOOP-POLE SPLITTING KNIFE—Carver Washburn, of Bridgewater, Mass.: I claim the improvement of applying a knife to the feed rollers, or the latter to the former, by means substantially as described, so that one may be made to approach towards and recede from the other, essentially in manner and for the purpose as specified.

STAMPING FIGURES IN CARPENTERS' SQUARES—Heman Whipple, of Shaftsbury, Vt.: I claim, first, the arrangement of a series of chase bars, jointed at one side of the machine, when combined with the anvil sustaining the square, and with the hand wheel, h, rack, or racks j, and pawl i, for regulating the relative positions of the anvil and chase bars, substantially as and for the purposes specified.

Second, I claim the arrangement of the levers, s a, and m, bolt y and y 1, bars z and x, and slot v, and pin e, for the purposes and substantially as specified, whereby the one motion of the lever, a (by the treadle t,) first turns the bar, z, around to confine the chase bar, C, and then gives the requisite compression of the chase bar at both ends on to the square or plate on the anvil, to retain the same firmly, while the chases are being separately struck into said square, as specified.

SELF-REGULATING WIND WHEEL—A. P. Wilson, of Salem, Ill.: I do not claim, broadly, the application of weights to adjustable sails, whereby the sails, by the action of the wind, are adjusted, so as to present a greater or less surface to it, according to its velocity, for weights have been applied and arranged in various ways for effecting the purpose.

But I claim constructing the sails of two parts, E F, attached, or fitted to inclined frames, which are secured to the arms, C D, the upper parts, F, of the sails, being hinged to their frames, a, and having weights, G, and cords, d, attached, substantially as shown and described for the purpose set forth.

[This appears to be one of the most simple and effective of the many devices for regulating windmills, and one which involves very little mechanism.]

LUBRICATING GAS COCKS—C. H. Johnson, of Boston, Mass., Assignor to himself and J. G. Hamblin, of same place; I do not confine my invention to making the stud, n, in the precise form and manner above set forth, as it may be otherwise constructed, so as to move into or out of the opening, o.

I claim, when the tapering plug of the faucet or stop cock is drawn into the tubular seat, by the action of the spring, f, as specified, combining with the seat tube, a, an entrance passage, k, and groove, l, and a movable stop, n, arranged substantially in the manner and for the purpose as specified, or, in other words, so as to enable a person to expeditiously lubricate the stop cock, without the necessity of entirely removing its plug from its seat tube.

SECOND ANCHOR SHACKLE—G. Gilmour, of Chelsea, Mass., assignor to himself and H. R. Clinkard, of same place. I do not claim a hoisting block made with a pawl and tripping lever, so applied to the pawl as to enable a person to elevate the latter out of engagement with a chain, when passing around the shear of the block.

But I claim my new improved anchor shackle, as made with a spring pawl, D, and trigger, or latching apparatus, F F, etc., arranged with reference to the roller, B, and made to operate substantially as described.

I also claim making the pawl forked, or with a recess, so as to enable it to straddle the chain as described.

RE-ISSUES.

CARDING ENGINES—A. D. Shattuck, of Grafton, Mass. Patented Sept. 23, 1856: I claim, first, the application to carding engines of two or more variable cylinders, arranged and operated in the manner substantially as set forth, for the purpose of preventing the filling up of the main cylinder.

Second, The use of a doffer in combination with strippers or cleaners, arranged and operating in the manner substantially as described, for the purpose of preventing the filling up of the main cylinder, and producing an uniform sheet.

SAW MILLS—Wm. P. Wood and Saml. DeVaughan, of Washington, D. C., assignees of G. W Hedge, of Brooklyn, N. Y., assignees of Lemuel Hedge, of New York City. Patented May 8, 1849: We claim the means above described to regulate the deflection of the saw blade when at work, that is to say, the application of the feed rollers to the back of the saw blade, for the purposes set forth.

We also claim the driving power to the lower pully, b, when the saw is designed to work in its downward motion, substantially as set forth.

DESIGNS.

COOKING STOVES—Allen Comstock, of Quincy, Ill.

STOVE DOORS—M. C. Burleigh, of Great Falls, N. Y.

[Pleasing effect on the eye is the whole object of this design. It involves a central ornament within an annular bead and radial corrugations on the face or panel of the door, with various beads around the edges of the panel.]

FLOOR OIL CLOTHS—James Hutchinson, of Lansingburgh, N. Y., Assignor to J. E. Whipple and. S. E. Haskell, of same place.

Bending Steamed Wood.

MESSRS. EDITORS—In late numbers of your journal I have noticed frequent mention of machinery for bending timber. The principle which effects the purpose (and without the application of this principle timber cannot be successfully bent) as has been described, consists of an end pressure to prevent the separation of the fibres on the outer surface while in the act of bending. This principle is not new. We have had it in successful operation for several years, and can bend any kind or quantity of wood we ever tried after being properly steamed. On my machine we have bent poplar timber taken from near the heart of an old tree, and every mechanic knows this to be the most obstinate of timber to bend, to form near half of a circle, whose diameter was twelve inches, the stuff bent being inch and a half square, and after being dressed hardly any mechanic would discover that it was not the natural growth. This machine has been exhibited at the Mechanic's Institute and State Fair, with timber that was bent upon it, and elicited the admiration of all who saw it. The machine I speak of is used at the Tennessee Plow Factory, in Nashville. The device is not patented, but is public property, and for the benefit of your readers interested in bending timber, I will briefly describe it.

My machine has an iron form of the shape desired to make the inner curve of the timber when bent, and an iron lever, with one end made thin and pliant, to bend with little resistance. This lever has a hook on the end, to attach it to the form, across the end of the timber, and a shoulder on the other end, outside of which is a nut, to screw the shoulder up against the end of the timber. When the timber is properly steamed, it is placed on the form; the lever is hooked on the end, and screwed up close against the other end, and then pressed down to its position. In the middle of the lever is a joint similar to a strap joint, with a long mortise through, to receive a key. Sometimes as the bending proceeds it is necessary to drive the key in and make the lever shorter between the shoulder, in order to effect a perfect bend; and again in bending timber that is very tough it will so strongly resist a compression of the fibre—or if the growths are large it has the same effect—that the nut on the end of the lever must be unscrewed when the timber is partly bent, to admit of stretching a little; this will secure a perfect bend, and obviate the tendency of the fibres to kink on the inside of the curve. This key and nut on the lever gives the operator entire control of the timber, and enables him to manage every piece as circumstances may require.

THOMAS SHARP.

Nashville, Tenn., March, 1857.

Proper Pressure to Blow-Off Boilers.

MESSRS. EDITORS—Will you be so kind as to inform me if it makes any difference how high the pressure of steam is in a boiler when blown off, if the fire is first withdrawn so as not to injure the boiler? I find nothing on the subject in any books that I have on the steam engine. C. A. C.

Yes. It makes a great difference in the incrustation of a boiler whether water is discharged hot or cold. If water is calcareous, it tends as soon as boiled down a little to deposit a crust on the whole interior. It happens that hot water, instead of as might be naturally supposed holding a larger quantity of these earthly particles, does not hold as much as cold, and hence arises the difference in effects in blowing off at different pressures, and consequently at different temperatures. If the water be blown out of a boiler at full pressure, it only carries out with it the particles then undeposited, (except, of course, a certain quantity of mud stirred up mechanically); but, if allowed to cool before it is withdrawn, the cold water will dissolve a part of the scale. Wiessenborn's valuable preventer of incrustion is based on the superior tendency of heated water to deposit, and the fact of this tendency is well known to chemists, and to many engineers, though not to all. The engineers of the propellers running between this city and Philadelphia keep their boilers perfectly clean, by taking care to draw out their water cold at the end of each trip, and replace it by new, while if they experimentally or carelessly once blow it off under pressure, they coat the whole interior with a thin white limy scale. The steamers plying between this port and Fall River do not lie long enough at either end to so cool their boilers complete, but do so as far as possible, even by pumping in cold water before blowing off; and as a general rule it may be said always cool down your boiler, and let the water flow out softly if you can, in preference to blowing it out under steam.

Balancing Slide Valves.

It is a question of some interest whether Mr. Worthington, or any one else, claims to have a patent on the use, in every way, of a balance piston working in a cylinder, and connected to a slide valve, so as to partly annihilate the effect of the pressure thereon. It is in common use, and has been for several years. The locomotive, "Iron Duke," in the London Exhibition, 1851, had her valves thus balanced.

D. D. Owen, the state geologist, reports the existence of great deposits of brown Hematite ore in Kentucky, which yield an average of from 62 to 66 per cent of pure iron.

Cunningham's Self-Reefing Topsails, an invention by which the sail is rolled up by revolving the yard, is in successful use on a number of English vessels.

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New Inventions.

Inventions Wanted.—Ventilation.

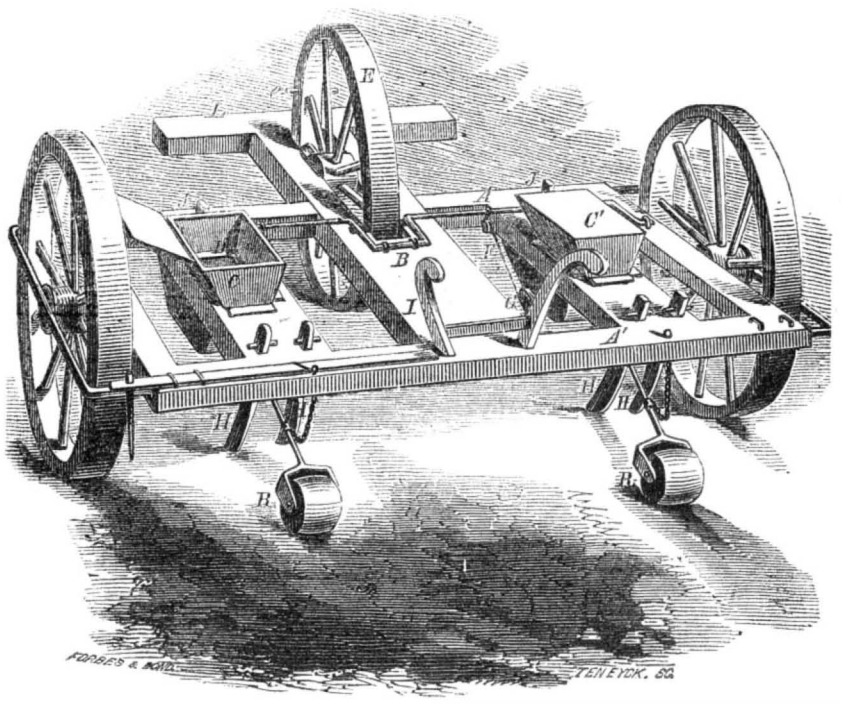
A great portion of the United States has a peculiarly dry climate, especially favorable for the preparation of dried fruits, etc., or for the curing of hay, and which renders unnecessary many expedients generally adopted in the more humid climate of Great Britain. Thus, for example, the practice of almost continually stirring the grass is here abandoned with advantage, and the labor of hay-making is much lessened by simply spreading, and only once turning over in a day. It is not true, as might be supposed from this, that we have less rain in a year than European countries, or a less number of rainy or cloudy days and hours, but the weather, when clear, rapidly assumes a state of great dryness, which has even been supposed by some injurious to health, but this supposition has not been borne out by statistical facts. It may be possible, however, that some portion of the difficulty experienced in finishing some very finely surfaced textile fabrics, expensive broadcloths for example, in this country, may be due to the hygrometric condition of the air, and it may be worth while to investigate the question how far the best condition may be attained by artificially preparing the air of manufactories. We conceive it would not be in any wise difficult, to afford proper ventilation in a large factory, and yet admit the air through a passage so provided with water surfaces or jets of steam that any desired degree of moisture may be added thereto, and it would not be absolutely impossible, even on so large a scale, to absorb moisture by the use of potassa or of sulphuric acid, and thus absolutely compel the air to assume any hygrometric condition desired. There are various pulmonary diseases and rheumatic affections, and very possibly many fevers, in which the moisture or absence of it in the air has a very important influence, and it might be of great importance to adapt such a device, if successful, to the ventilation of hospitals. We all know the effect of stoves in drying the air and producing stupidity and headache, and also the effect of water liberally evaporated thereon as a preventive of these bad effects. We merely throw out these thoughts as suggestions to the active minds of our inventors.

The Stirling Talabot Patent Process for Iron.

We last week described Stirling toughened iron as cast iron in which a quantity of wrought iron had been melted or dissolved by mixture, basing the assertion on the experiments as originally conducted some six or eight years ago at the —— foundry by the inventor. A patent, designated at the head of this article, by the same inventor, Morries Stirling, represented in French journals as being now brought more prominently before the iron trade, seems to be a modification, perhaps an improvement thereon.

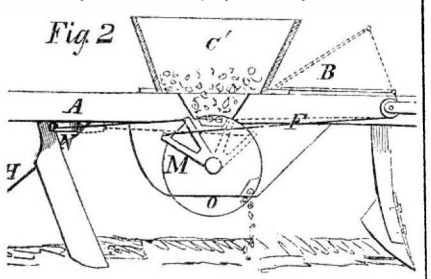
The present invention is described as consisting in running iron from the blast furnace, in the usual way, into molds of cast iron, sand, or other material applicable to the purpose, in which a mixture of oxyd of iron, with ligneous or other combustible matter has been previously placed. Hæmatite in fine powder—as free as possible from foreign matter, especially clay—mixed with an equal bulk of wood sawdust answers well. The character of the pig iron is changed by the chemical action which ensues on its contact with the mixture, and the resulting iron is much improved for particular purposes, especially for the manufacture of malleable or wrought iron. The advantages of the process are described to be, first, in puddling the pig iron so made there is a saving in time, varying from one-third to one-half, according to the nature of the iron, and, consequently, an economy in fuel to the same extent, with considerably less waste of iron. Second, the process of refining is rendered unnecessary, and third, the quality of the malleable iron is placed more under the control of the manufacturer by the combination of other metallic oxyds with the oxyds of iron; thus, by the use of zinc, increased fibrousness and strength are obtained; by the use of tin increased hardness with a crystalline texture; and by the use of oxyds of iron and woody matter alone, improvements in the quality is produced—the latter advantage being most perceptible in cases of inferior iron. Its advocates say that no change is required in the construction of any furnace or other apparatus used in making the iron, nor is there any change in the mode of working, and no addition to the expense of manufacture is caused by the use of the process, when oxyds of iron and woody matter are alone used, as the quantity of oxyd decomposed and absorbed is sufficient to cover the cost of the mixture. The saving in time in puddling applies more particularly to the Welsh and North of England iron. The saving in the use of Staffordshire iron, they allege, has been found to be from twenty-five to thirty minutes out of an hour.

GOODWIN'S CORN PLANTER.



The accompanying engravings represent a planter for which a patent has just been issued to Mr. Firman Goodwin, of Astoria, in this State. It is designed to operate by horse power, to plant two rows at a time, and to excavate, plant, and cover, at one operation. Provision is made for giving the rows any desirable distance apart, and for planting the corn in hills at variable distances in each row. Altogether the machine seems to be one of the best for planting on a large scale, as in the rich alluvial lands of the West.

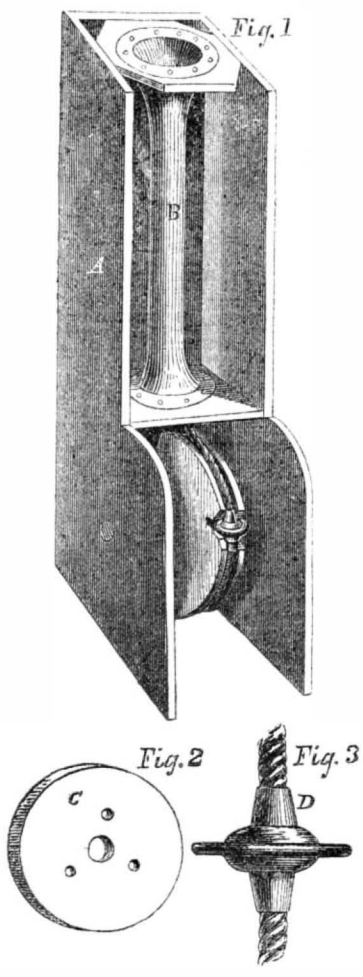
The body is a light frame, A, supported on two carrying wheels as represented, drawn by a horse attached to suitable thills at L—not represented. It is lifted at pleasure or controlled by the handles, I, held by the attendant. The wheel, E, traveling a little in advance gives motion to the dropping devices which latter are located beneath the seed reservoirs, C and C'. The portions of the frame on which these seed reservoirs, with their attachments, are supported, are moveable in the frame, A, and may be set and secured at any required distance apart. A side elevation of one of these parts, with its attachments complete, is shown by fig. 2. The plow, K, opens a shallow furrow in advance of the planting operation, and the plows or scrapers, H H, standing a little oblique to the motion of the machine, inclines the earth back again to cover the seed, while the roller, R, travelling behind ensures a smooth surface. The planting device itself is the chief peculiarity, and is shown most plainly in fig. 2.



The wheel, O, containing a cavity in its periphery to receive the seed, is partially rotated on its axis, so as to empty the contents into the furrow as often as the string, F, attached to the arm, M, is pulled. This string, after passing through a pulley as represented, is attached to the lever, B, which extends continuously along the frame, as represented, and receives motion at intervals from pins, *e*, inserted in the sides of the wheel, E. Two, three or more of these pins may be inserted at pleasure in the wheel. and the seed will consequently be planted at corresponding intervals. A spring, N, is provided, which by its tension moves back the parts of the planting devices to their original positions so soon as the lever, B, is released. The result of the whole combination is a continuous excavation for and covering of the seed, and a quick intermittant action of the planting devices as each pin, *e*, acts on and lifts the lever, B, and the corn is planted in hills under the perfect control of the attendant, though without any labor on his part.

Fuller information concerning this invention may be obtained by addressing Mr. Goodwin, as above.

Improved Chain Pump.



The accompanying engravings illustrate an improvement in Chain Pumps, patented by Mr. Edmund Morris, of Burlington, N. J., Feb. 10th, of the present year. Mr. Morris claims that this is a "perfect pump." It operates on a principle now first developed in its application to pumps, namely, that instead of packing the bucket the log itself is packed.

In the cut, A is a wooden chamber—the front taken off to exhibit the interior—in which is placed a tube, B, of india rubber, flaring at each end, and supported in a vertical position by cross-blocks above and below. The lower block fits water-tight; the upper one has its corners taken off, so as to allow the water from above to descend through the corner holes and surround the tube in the chamber so as to press it into water-tight contact with each bucket as it rises through it. Below is the lower reel for the chain to pass over, with notches for the buckets to fall into.

The proportions adopted by the inventor for ordinary domestic and farm purposes are such that the chamber is about 4 inches square inside, and the rubber tube 18 inches long by 1 1-2 inch bore, and 1-4 thick. The chamber, thus containing the whole real working part of the pump, is spliced at the top by adding a rough addition long enough to reach to the top of the well, and is then lowered to its place at the bottom.

The reels, crank, and top are nearly similar to those in common use. But the chain and buckets are usually constructed differently. The chain used is made of galvanized wire rope, very strong, very light, perfectly flexible, and working almost noiselessly. The bucket is formed chiefly of a brass disk, C; being placed in a mold of suitable shape, and the cord passed through the center hole, melted solder is poured in, to fill the remaining cavities, and the bucket, D, comes out perfect, and firmly cemented to the cord. This chain is very durable, and is made very cheaply. But the common link chain now in use may also be used by those who prefer it.

Now the bucket being about one-eighth of an inch wider than the bore of the tube, and the tube hugging it very tight as it passes up, a vacuum is immediately created, and the water follows it as it does the piston of a well-packed syringe. Before one bucket escapes from the tube another enters it, and the whole friction of the pump is confined to the tube itself.

Nor does this pump lose its water. it is alleged, like most chain pumps, but a single turn of the crank causes it to flow. The pressure of the column of water in the log, acting through the openings in the upper block on the outer surface of the tube, creates an unintermitted binding of the tube against the bucket, which effectually prevents the pump from losing its water.

Further particulars may be had by addressing the patentee.

Speed of Millstones.—Tempering Picks.

A correspondent, W. O. Jacobi, of Mellenville, N. Y., answers the query with regard to the best speed of millstones, that he runs a stone 4 feet in diameter 160 revolutions per minute, and always calculates to run the periphery of the stone at the same absolute velocity, no matter how large or small the stone is. On tempering mill picks he agrees with our former conclusions, and adds that charcoal or bituminous coal should be employed. Cool in water prepared as per G. S., as published in our last issue.

Automatic Oven.

The mammoth establishment constructed by Mr. H. Berdan, in Brooklyn, capable of baking into superior bread 540 barrels of flour in twenty-four hours has proved quite successful, and a number more are to be constructed on the same plan in this and other cities.

A correspondent, Mr. W. Westlake, of Wis., recommends sulphur as an excellent article to set tinner's solder when it is rough, in case rosin will not do it.

Wrought iron will crush together under a smaller strain than is required to rend it by a direct pull. With cast iron the reverse is true. These facts should be borne in mind in selecting material.

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Scientific American.

NEW YORK, MARCH 21, 1857.

Steam Engine Improvements.

The city of Buffalo is a good example of the attention now aroused to improving and testing steam engines. Three years ago, the shops of Buffalo and all the Lake cities were turning out direct-acting high pressure engines alone, and although they had attained to great perfection in the employment of suitable devices for very high pressure steam, and had succeeded in producing some of the most fast and economical propellers in the world. they adhered to that fixed style with great tenacity. Now, oscillating engines have almost completely displaced them, and although quite high pressure steam is very properly employed in the boilers, the benefits due to condensation are availed of in all the larger vessels by the introduction of all the usual apparatus for the purpose. In addition, the Buffalo steam engine works are arranging for the construction of the Corliss engine, the invention which has proved itself so eminently successful in the manufactories of the East for some five years past; the Messrs. Schultz are commencing the construction of the Woodruff and Beach style, another modern improvement; and the Shepard Iron Works, the largest and most successful in all that portion of the West, are getting out new, beautiful and highly economical styles of their own. Work is not as active as at some former periods, which is perhaps one reason why the leisure is afforded to construct new patterns, but all seem alive to the importance of knowing the best styles, and of allowing them to supersede the wasteful old methods either in stationary or marine engines. A few years will probably see our interior and Western engineering as far advanced as is that of our seaboard places; in fact, the former are in some points already ahead. The difference in the circumstances will always induce a necessary change in the details of much of the machinery common to the two sections; but the workmen of the Atlantic shores may be assured that the West is progressing with most rapid strides, even in the department which they have heretofore considered especially their own. The locomotives of the West, and to a considerable extent of the South, are now made on their own soil. The sharp, flat bottomed boats of the rivers are urged by machinery cast and finished within sight of their landings, and the hundreds of stout propellers plying the chain of lakes are actuated by well constructed oscillating cylinders bearing on richly burnished labels the names of Shepard, Cuyahoga, and other principal shops of their own ports. The largest sizes of engines for mammoth side wheel steamers and water works are still built in New York and Philadelphia, and forwarded in parts, as the Western tools are not equal to such operations; but only a few years or months may elapse before the West will be independent in the manufacture of engines unless the East can keep up, or in many points *create*, a reputation for very superior excellence in design or execution. The rivalry is wholesome, and the stimulus it affords hastens forward the progress of the industrial interests of the whole country. There is scarcely a branch of manufacture but is more or less dependent on steam power. Its perfection indirectly aids to cheapen the tools of the farmer, and to diminish the expenses of the poorest railroad traveler. All are linked in interests in this repect, and we hope to see the economy of fuel due to the perfection of the steam engine ultimately progress many fold beyond its present most advanced position.

It is not generally realized, but the steam engineers of 1857 are yet in the condition of our forefathers, who used to balance the bag of corn on the back of the horse, by placing a big stone in the other end. We should like to publish, occasionally, in a few lines, the actual performance of any engines and boilers which are believed to be among the best in the world. Give us the amount of wood and coal consumed, and the work done, and add any circumstances important in connection. The best "duty" of any pumping engine we have heard of in America is the Beam Cornish Engine at Belleville, which pumps the water for Jersey City. This, when very carefully attended to for an experiment, a few weeks ago, lifted seventy-two million pounds one foot high with the consumption of 100 pounds of coal. The pumping engine at Hartford, tested in the same careful manner, attained a duty of sixty-two millions. Both these performances are better than any before attained in this country, we think.

Dressing Skins for Robes, Saddles, and Mats.

A correspondent requests us to give him information concerning the method of dressing skins "with the hair on." It differs but little in principle from that of tanning them for leather. In preparing skins for leather, they have to be deprived of their hair either by sweating or liming, this process is dispensed with in preparing robes. The fresh skins, if they have to stand for some time before they can be treated, are first steeped in a brine of common salt; then lifted out of the brine and laid over a table or bench, with the hairy side downward, all the fleshy parts scraped off clean with a knife, and the ragged edges cut off and trimmed. They are now ready for undergoing the preserving operations. If they are clean white sheep skins, intended for seats, saddles, or mats, they are steeped in a solution of alum for several days—from three to six—then lifted out, nailed on racks to stretch them to their fullest extent, and dried in the air; they are now ready for use. The strength of the alum solution employed should be at the rate of one pound of alum to every four pounds of skins, the alum being dissolved in sufficient quantity to cover the skins.

Calf, dog or other skins designed for robes are prepared in a different manner. After having all the fleshy parts removed as heretofore described, they are steeped in a bath of oak bark or sumac, or blackberry wood liquor, containing some alum in solution. A peck of ground oak bark is sufficient for tanning twenty pounds of skins; it will require twenty pounds of American sumac, or the same amount of young blackberry bushes to effect the same object. These are boiled in a close vessel for about three hours in water to extract their strength, then mixed with sufficient cold water to cover the skins in two separate baths (or else boiled at two several times). Three pounds of dissolved alum are also placed in each bath when they are ready for the skins; these are all placed in one of the baths at one time, and allowed to remain for three days, being turned in the interim every succeeding day, and then lifted out, dripped and placed in the fresh bath where they undergo similar operations during the next three days. They are again lifted out, nailed on racks, dried in the open air, and are then fit for use.

Skins are composed mostly of gelatine which is very liable to decompose by exposure to moisture and the atmosphere. To preserve them, they are brought into chemical union with some substance or substances, so as to form an insoluble compound. An acid in oak bark, willow, sumac and hemlock, has been used from time immemorial as the chemical agent, to form an insoluble compound with the gelatine of the skins by the process called tanning. Any other chemical substance that will produce the same effect may be used for the same object, and hence alum, which is a colorless substance, is employed for this purpose for white skins. Robes of skins require to be more elastic and soft than leather, hence they are not submitted to the tanning processes for such a long period. Young blackberry bushes impart to the skins greater softness than oak or sumac liquors.

To preserve skin robes from the attacks of insects, they should be submitted to a slight smoking in a smoke house, and then hung up in the wind for a few days afterwards. If found to be a little too hard when dried, they should be beaten with rods until they are quite soft. By attending to these directions carefully, persons living in the country may prepare their own skins with no more apparatus than a barrel, a table, and a kettle.

The Best Roofing Materials.

A correspondent asks what is the best covering for roofs? The question is one of the many we are unprepared to answer, and we solicit the aid of any who, by practical experience, have determined either the value or worthlessness of the infinite variety of materials. The expense is a matter of the first importance on large buildings, and although a fire-proof character is important in many situations, there are others where this latter is of little moment. Roofs which, like the Boston Custom House, are of thick granite throughout, cemented with lead, may probably rank among the *best* in the world, and a simple covering of inferior boards slightly overlapping at their edges, is in most situations undoubtedly the cheapest. Between these extremes are a host of materials and processes, some of which we are assured possess great merit, and have not yet been sufficiently published. Do not attempt to ventilate through our columns all the theories you may form on the subject, but give us facts as they have occurred within either your experience or observation.

There are several manufacturers of patent fire-proof paint who furnish a very cheap material for covering wooden roofs. Messrs. Corliss & Nightingale, of Providence, R. I., cover the roofs of their very extensive one-story buildings with a kind of mineral paint, procured in great quantities near by. Will they allow us to publish the characteristics of such clay or other earth, that others may perhaps find equally good without expense?

There is a painter in the Third avenue in this city, who has been very successful in applying a kind of liquid cement to roofs, and there are hosts of patents for compounds for this purpose. The great difficulty, we think, with most organic compounds in this application has been its inclination to crack after a few years, or even months. The correspondent who started the inquiry says:—"We have been using coal tar on a flat roof, but it contracts and cracks, and will not answer," and inquires "how would Burnettized cloth answer by painting?"

An article on this subject in the New York *Tribune* last year, probably written by Mr. Solon Robinson, recommended the following:—"There is a tarred paper sold at five cents a pound, one pound of which will cover a yard square, or say half a cent a foot; but this paper is rather thin, and we should prefer the thick, spongy straw board paper used for light, cheap boxes. It does not require to be strong, and perhaps the cheap article alluded to will answer perfectly; if so, a roof can be made for one cent a foot. This paper comes in rolls, and may be laid in courses up and down or across the roof, so that the edges are lapped, and tacked with common 6 oz. tacks, which would be very much improved by using leather under the heads, as is often used in tacking carpets. The composition for covering a paper roof is made of the following ingredients: good clean tar, 8 gallons; Roman cement, 2 gallons; rosin, 5 lbs.; tallow, 3 lbs.; boil and stir, and thoroughly mix altogether, and use hot, spreading it evenly, in a thick coat over the paper, which should be tacked upon thoroughly seasoned boards—kiln-dried are best. The roof may be quite flat, rising only one foot in twelve. In nailing on the paper, lap the courses as you would shingles, and commence putting on the composition at the upper edge and work down, and while the coating is still hot, let a hand follow and sift on sharp grit sand, pressing it into the tar with a trowel or back of a shovel. When the first coat is cool, go over with a second, and again with a third, and afterwards once in five or six years as long as your house stands, and you will have a tight roof. In place of the Roman cement, you may use very fine, very clean sand."

Weighing Gold Quartz.

Everybody knows how the old Grecian philosopher ascertained the proportion of gold in the King's crown, to determine the honesty of the goldsmiths, which was simply that of finding its specific gravity by weighing it first in air and then in water, and estimating the difference. Pure gold being denser than alloy the specific gravity is greater, and knowing the specific gravity both of gold and the silver with which it was mixed in the crown, he found the proportion by this means very readily. An invention has recently been obscurely announced which is to ascertain the weight of gold contained in gold bearing quartz, but whether or not by any ingenious application of the same principle we cannot well determine. It is represented as simple and of little cost, and as ascertaining the amount of gold "by measures and weights, with an index and the use of the most simple rules of mental arithmetic. The principle can be applied to other metal and mineral substances, when composed of but two different specific gravities, and is easily adjusted to porous or solid quartz" In reply to an inquiry we unhesitatingly say that if the apparatus is capable of indicating with sufficient accuracy for this purpose, which must be extreme, its value is unquestionable.

To Boys.—Misapplied Labor.

All necessarily spend a part of their time to little or no apparent profit; but it should be only that which is spent in feeling the way—in fact, in experimenting. Be as careful not to spend in useless labor a particle of your energies as you are to cultivate a habit of labor itself. Don't let the fact that the American Institute, or some other old-coach concern, has allowed a few exhibitors to label their abortions "done with a jack-knife" or in some other equally foolish way, induce a belief that the public generally are interested in such ridiculous efforts. All whose esteem is worth having, look on such child's play as merely refined idleness. Don't spend an hour in it, except by chance and before you are conscious of it.

Ingenuity is a serious damage to some persons. Having "constructiveness" well developed, they begin, when boys, to labor hours and days in simply making something. Their highest ambition was to be thought ingenious and they succeeded. When older grown, the same plentitude of unguided ingenuity, and the same lack not only of judgment, but of any serious effort at cultivating that faculty is still discernible. They toil and construct, but accomplish nothing. They are not men who make money for themselves or benefit their race. They are pitiable monuments of misdirected talent.

Have a purpose, then, in all you do. If a certain scheme looks promising when sifted, push it ahead, and a few dozen failures will give you considerable skill in that same sifting process. You will frequently find the object, when attained, too small to pay for time and care invested, but will always have the satisfaction of acting not under the blind impulses of "genius" alone, but guiding it by a noble God-given and carefully cultivated judgment.

The Patent Extensions.

Congress has adjourned, and left the entire batch of patent extensionists in a most wretched state of confusion, their schemes have failed, and there is now no other alternative left to them but to return home, pocket the loss of money spent, and dispel their happy visions for the future. Their last hopes have fled, as it is understood that President Buchanan, is wholly opposed to special legislation for the benefit of a few hungry monopolists who desire to bestride the public.

Oil.

The *New London Star* claims that it is as easy to obtain pure sperm oil now, by applying at the right places in that city, as it was twenty years ago. This may be true; but, if so, it would be a great public convenience if these honest dealers would establish branches in the principal cities, as it is believed to be absolutely impossible to buy sperm oil in this city, except by going to the manufactories and watching it through all the processes.

Heavy Cables.

A cable lately finished by a Liverpool firm for the steamship *Adriatic*, 80 yards long, weighs 50 pounds per link, and has been tested with a strain of 105 tuns. The same concern is making a cable for the *Great Eastern*, to weigh 80 lbs. per link. The length of the link in either cable has not been published.

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Source of the Sun's Heat.

The following is an abstract of Professor Thompson's (of England,) article—often referred to—in which he advocates the hypothesis, "that meteors falling into the sun give rise to the heat which he emits."

All the theories that have yet been proposed to account for the heat of the sun, he remarks, as well as every conceivable theory, must be one or other, or a combination, of the following three :—

1st. That the sun is a heating body, losing heat.

2d. That the heat emitted from the sun is due to chemical action among materials originally belonging to his mass, or that the sun is a great fire.

3d. That meteors falling into the sun give rise to the heat which he emits.

It is demonstrable that unless the sun be of matter inconceivably more conductive of heat, and less volatile, than any terrestrial meteoric matter we know, he would become dark in two or three minutes, or days, or years, at his present rate of emission, if he had no source of energy to draw from but primitive heat.

The object of the communication is to consider the relative capabilities of the second and third hypotheses to account for the phenomena.

In the first place, it is probable that there are always meteors falling to the sun, since the fact of meteors coming to the earth proves the existence of such bodies moving about in space. It is easy to prove that meteors falling to the sun must enter his atmosphere or strike his surface with immensely greater relative velocities than those with which meteors falling to the earth enter the earth's atmosphere, or strike the earth's surface. Now, Joule has shown that immense quantities of heat must be generated from this relative motion in case of meteors falling to the earth —and it is all but certain that, in a vast majority of cases, this generation of heat is so intense as to raise the body in temperature gradually up to an intense white heat, and cause it to burst ultimately into sparks in the air, and burn, if it be of metallic iron, before it reaches the surface. Such effects must be experienced to an enormously greater degree before reaching his surface, by meteors falling to the sun, if, as is highly probable, he has a dense atmosphere. Hence, it is certain that *some* light and heat radiating from the sun is due to meteors.

It is estimated that the quantity of matter that would be required to strike, is about a pound to the square foot for every five hours. At this rate, the surface would be covered to a depth of thirty feet in the year, if the density of the deposit is the same as that of water. We find the source of meteors principally within the earth's orbit; and we actually see them there as the "zodiacal light," according to Herschel, an illuminated shower, or rather tornado of stones. The inner parts of this tornado are always getting caught in the sun's atmosphere, and drawn to his mass by gravitation. The outer edge of the zodiacal light appears to reach nearly to the earth at present; and in past time it may be that the earth has been in a dense enough part of it to be kept hot, as the sun is now, by drawing in meteors to its surface. This calculation is according to Mr. Waterson's form of the theory, but, according to Prof. Thompson's, the fall of meteors must be twice that determined above. Then the whole surface would be covered annually to the depth of sixty feet, and the sun would grow in diameter a mile in eighty-eight years. Even at this rate, it would take 4,000 years to grow sufficiently to make the change apparent to the most refined observations.

A body of such dimensions as the sun might, by entering a cloud of meteors, become incandescent intensely in a few seconds, and on again getting to a position comparatively free from meteors, as suddenly become dark again.

A supposition that some of the fixed stars are suns irregularly supplied with meteors from a nebulous atmosphere, which revolves eliptically around, and occasionally envelopes them, may, on this hypothesis, be suggested as a theory to account for the existence of periodically fixed stars.

If the sun is burning, and its conditions are similar to those of the earth, the fire would be choked, and by no conceivable adaptation of air and fuel, could keep a light for more than a few minutes. If it contains within itself all the elements of combustion, to give the amount of light and heat required would by demonstration cause it to burn away in 8,000 years. If the sun has been burning at that rate, it must have been of double diameter, quadruple heating power, and eight-fold mass, only 8,000 years ago.

The Steamship Great Britain.

This iron steamship, once astonishingly large, has, since her last visit to this country, been employed both in the Australian trade and Government transit service, making, under steam alone, a maximum speed of 8 1-2 knots, at an average consumption of from 33 to 38 tuns of coal daily. She has now been again overhauled, and was to have left for Australia as both a full rigged clipper ship and a first class steamer, on the 15th of February.

The Liverpool *Courier* says that "the mainmast weighs eighteen tuns, and is forty-three inches in diameter. The size of her spars have also been increased, so that she will now have nearly one-fourth more sail than she formerly spread. Above the lower masts all the spars are bran new. The lower yard of the *Great Britain*, which, like all her other yards, is of pitch pine, is 105 feet long, and 25 inches in diameter. Her lower topsail yards are 90 feet long; her upper topsail yards 83 feet long; her top-gallant yards 60 feet long, and her royal yards 47 feet long."

Science and the Industrial Arts.

The Philadelphia *Ledger*, in remarking upon the above subject, expresses the opinion that in the use of improved machinery American flour mills are far in advance of those in Europe. At the commencement of the present century, the French, as well as ourselves, introduced the system of creepers and elevators, by which a considerable amount of labor was saved, and the operation of grinding rendered more complete; and from time immemorial it has been the custom to drive the millstones from a large spur wheel, round which they were placed, in the middle of the mill. This arrangement of the grinding process is still in use in many parts of France. The millstones are generally driven by straps or belts; in England, almost always by gearing.

A gigantic enterprise is contemplated in London, namely, the adoption of Mr. Stephenson's magnificent plan, to perfect a railway from London to Calcutta direct—the only interruption being at the Straits of Dover and the Bosphorus. By this route, the distance will be accomplished in less than a week. It will occupy ten years in constructing. A surveyor is now making flying levels.

Hail.

The New York Almanac remarks that hail is chiefly restricted to the temperate latitudes, and in these is most frequent during spring and summer. Within the tropics it seldom falls at a lower altitude than from 1,500 to 2,000 feet above the level of the sea. The explanation usually given of this fact is, that the temperature, which increases downward to the surface of the earth, is constantly so high in those regions that hail never descends to a lower altitude than that above-mentioned without being melted.

The squall of wind, or whirlwind, which accompanies and ushers in the hail storm, is no doubt produced by the depression of temperature which the hail communicates to the lower atmosphere in its descent to the ground.

Hail presents every appearance of having frozen during its fall, and not like snow of freezing in the form of clouds. It has much puzzled meterologists to show why rain should ever get frozen in descending to a lower altitude, instead of melting and coming in the shape of rain. A cold current of air blowing suddenly in the direction of a rain cloud, is understood to be the immediate cause of most hail showers. The large size of hail stones is attributed to an accumulation during the progress of their descent. It is probable that the largest commences with a small nucleus, which receives continued accessions from vapory particles in the neighborhood. Accordingly, hail-stones are found to be smaller on the tops of mountains than in the neighboring plains and valleys, because, not falling so far, they do not augment their size by the addition of successive layers of watery vapor.

Fountain of Blood in a Cavern.

E. G. Squiers' notes on Central America describe a wonderful effusion of a fluid resembling blood near the town of Vitud, in the State of Honduras. It appears that there is continually oozing and dropping from the roof of a cavern there a red liquid, which upon falling coagulates so as to precisely resemble blood. Like blood it corrupts, insects deposit their larvae in it, and dogs and buzzards resort to the cavern to eat it. Attempts have several times been made to obtain some of this liquid for the purpose of analysis, but in all cases without success, in consequence of its rapid decomposition, whereby the bottles containing it were broken. The small cavern or grotto during the day is visited by buzzards and hawks, and at night by a multitude of vampyre bats for the purpose of feeding on the unnatural blood. It is situated on the border of a rivulet, which it keeps reddened with a small flow of the liquid, which has the color, taste and smell of blood. In approaching the grotto, a disagreeable odor is observed, and when it is reached there may be some pools of the apparent blood in a state of coagulation. Dogs eat it eagerly.

The peculiarities of the liquid are considered due to the rapid generation in this grotto of some very prolific species of infusoria. The California *State Journal* remarking on the above observes that the *estero* of the town of Monterey contains a species of blood red infusoria, (the larvae of water insects.) which at certain seasons of the year smells precisely like fresh fish, or on exposure in a vessel, like putrid fish. In some seasons it has been found dried in flakes, and of the intense color of vermillion.

Laying the Great Telegraph.

The Secretary of the Navy has ordered the U. S. steamers *Niagara* and *Mississippi* to proceed to England at the proper time this summer, to assist in laying down the submarine telegraph cable between Newfoundland and Ireland. The *Niagara* is the largest steam vessel of war in the world, and the *Mississippi* is the most powerful paddle-wheel steamer in our Navy. It is not yet known what two ships the English government will furnish to perform its part of the undertaking. The *Niagara* will receive on board at London or Liverpool one half of the cable, and the other half will be put on board the English naval propeller. A paddle-wheel steamer is to attend on the propeller for each nation, so that in case of accident the propellers may be taken in tow and proceed on the voyage —a part of the programme we omitted in our notice last week. As justly remarked by the daily papers in chronicling the fact, "It is a sign of advancing civilization when the ships of war of these two great nations thus meet in mid-ocean, not for a naval battle, but in a peaceful effort to join the two hemispheres."

Controlling the Sex of Bees.

It has long been believed that the sex of bees can be controlled by changing the position of the comb. Thus the usual position of the drone cells, and also of the worker cells is horizontal; but if, after the eggs for the workers—which are neutral in sex—have been deposited, the cells be artificially changed from the horizontal to a vertical position, females or queens will be produced. It is now claimed as a discovery made by Mr. Samuel Wagner, of York, Pa., that the sex of bees are also controlled by the size of the cells. According to a statement set forth by a recent writer, the manner in which the bees proceed to make a queen, when a queenless hive is supplied with common worker cells and eggs, is as follows :—They gnaw the partitions of three cells away, and remove two of the eggs; the remaining one, when hatched, is fed with a substance termed by apiarians "royal jelly," which, according to experiments recently perfected, is elaborated in the stomach of the working bees, and has the peculiar property of stimulating and hastening the development of the insect which, when grown, proves to be a queen. Whereas, the remaining eggs, including those laid within the same minute as the one chosen for a larger development, are not hatched until five days after. If the egg which is chosen for elevation should prove, from want of others younger, to be more than four or five days old, the process will be a failure.

Ingenuity of the Germans.

The following are some of the inventions generally credited to natives of Germany, and also the times when they were made known :—

"Saw mills in 850; sun dials in 898; fulling mills in 996; windmills and oil paintings, in 1100; spectacles in 1270; paper of linen rags in 1300; organs in 1312; gunpowder and cannons in 1318; hats in 1330; wire making in 1350; pins in 1379; grist mills in 1389; wood engraving in 1436; printing in 1436; printing presses in 1439; copperplate engraving and printing ink in 1440; cast types in 1442; chiming of bells in 1487; watches, letter posts or mails, etching and bolting apparatus, in 1500; gun locks in 1527; spinning wheels in 1535; almanacs, sealing-wax and stoves in 1546; telescopes in 1590; wooden bellows in 1610; microscopes in 1620; thermometers in 1638; mezzotint engraving in 1643; air pumps in 1650; electric machines in 1651; pendulum clocks in 1665; clarionets in 1690; white china ware in 1706; Prussian blue in 1707; stereotypes in 1709; mercurial thermometers in 1715; pianofortes in 1717; solar microscopes in 1736; the gamut in 1753; lithography in 1783."

These statistics, which we find floating in our exchanges, are probably not very reliable in regard to dates, in fact we feel certain that saw mills cannot be traced back so far, but the fact of nearly or quite all these important inventions originating in that country, is, we think, correct. Door locks and latches, the modern screw auger and gimlet, the cradle for harvesting, &c., are also credited to the Germans. At first thought, on reading the above, this patient, persevering, deep-thinking nation would appear to have introduced almost all the progress the world has seen.

Another Man of Science Gone.

Jacob W. Bailey, Professor of Chemistry and Natural Sciences at the United States Military Academy at West Point, died of consumption last week. Among scientific men, none ranked higher than he, in departments of chemical and microscopical research. He had bestowed much care upon the examination of the Infusoria; and his discoveries in the minute botany of the coral formations added very greatly to his celebrity. Science has sustained heavy losses in the space of three or four months. In succession, its ranks have been thinned by the deaths of Hugh Miller, Andrew Ure, Wm. C. Redfield, E. K. Kane, and J. W. Bailey. Professor B. was president elect of the American Association for the Advancement of Science, which meets in Montreal in August next.

Post Office Orders.

It has been recently stated that the British system of sending money orders has carried the equivalent of $50,000,000 from place to place by mail, without the loss of more than $2·00, while our system of "registering" letters is so notoriously inefficient that all well informed persons now prefer not to register them, as the act does not make the department responsible, but only serves to point out the money letters to thieves. In England no sums greater than £10 can be sent by Post Office orders, but in Canada as large sums as £25 can be sent, and under both conditions the plan is believed to have proved itself perfectly successful. The charge for each order is threepence or sixpence, and if larger sums than the limit prescribed are to be sent, it is only necessary to purchase two or more orders. It should be introduced here.

The Great Eastern.

Preparations are pretty nearly completed at Portland to accommodate the mammoth steamship *Great Eastern* on her arrival. A new pier has been built, the depth of water at the end of which is 30 feet at low water. This is considerably more than the ship will probably require.

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A. C. M., of Pa.—How did Naterer measure 220 deg Fah. below zero! We never heard before of such a low temperature being obtained.

G. S. Y., of Miss.—Gun cotton is made by digesting cotton in sulpho-nitric acid. On page 212, Vol. 8, Scientific American, you will find a very full description of a good method to make gun cotton.

W G. B., of Ala.—Saws strained between single springs are quite old.

S. A., of Mass.—There is nothing new or patentable in your projectiles, so far as described.

W. McB., of Ohio.—We have no doubt that you desire to advance the best interests of inventors, and we are not prepared to say that your views in respect to the fees are are incorrect. They are, however, impracticable at present. Congress will not meet till next winter, and it is out of season now to advocate reforms in the law. Revolve the subject in your mind and collect facts thereon till the next session; then let us hear from you again, if the subject still seems to you important.

L. G. T., of Conn.—The price of the Ambrotype Manual is probably about $1. Fairchild & Co., 109 Nassau street, are the publishers. "Is Turkey rhuburb (Rheum Palmitum) cultivated in this country? It appears to be a distinct species from the pie plant [Rheum Rhapontucum)." Can any correspondent inform him? We have not the information.

W. R., of Fla.—Small batteries were constructed and advertised quite extensively a few years ago for medical purposes. The price, we think, was $9, and presume they can be had now in this city.

E. C., of C.—Your bomb to be exploded by concussion in striking would be defeated by the liability of the bomb to turn around while flying. The idea is very old, but your form of it is probably new and worthless. We attach no value to your suggestions on electricity.

E. L. M., of L. I.—No. "A large wheel turning in a wagon" would not "tend to propel the wagon in the opposite direction," nor in any other. Your magnetic perpetual motion contains no elements of success.

C H. C., of Conn.—"What would be the effect on a body, the brig Advance for instance, if it had advanced to the north pole, and come in direct line with the axis of the earth?" Answer: Nothing.

"——" Effects are not patentable, but only the modes of producing them. If you have a saw gummer operating in some novel manner you can patent it, or if you produce either by new or old means a substantially novel saw, you can patent it as a new manufacture, but you cannot patent an effect alone, such as gumming saws rapidly.

T. B. T., of Ohio.—We are not sufficiently well acquainted with the wild gooseberry to enable us to advise with you in reference to its value as a hedge.

S. C., of N. Y.—You have discovered a gas easily produced, with elastic power, sufficient to drive machinery like steam, and wish to condense it so that you may use the same over again, and thus obtain power at almost no cost. We consider the problem hopeless in the present state of the arts.

Wm Beswick, of Lancaster, Wis., wishes to purchase a water wheel best adapted to a stream with plenty of water, and only about five feet fall.

L. N. Y., of Nova Scotia.—You can procure a good saw gummer of Hoe & Co., this city.

J J. Fleming, of St. Paul, Ind., wishes to correspond with some manufacturer of cast steel wire No. 24.

M. C. L, of C. W.—You can procure such a steam engine as you want of Wm. Burden, Brooklyn, N. Y.

T. R., of N, Y.—The reason why your gas bill is as high since the price of gas was reduced as it was before, may be owing to a greater pressure of gas in the main pipe—a point which is now being investigated in this city. There are two kinds of gas meters, the wet and the dry. In the former the gas passes through a wheel, which it revolves in water, and its revolutions measures the quantity passing through. The dry meter is composed of flexible diaphragm chambers, which expand and contract as the gas fills and exhausts out of them. By the acts of expansion and contraction they register the quantity that passes through them.

P. W. B., of N. Y.—1st. Breech-loading fire-arms will not stand as much wear and tear as muzzle-loading pieces. 2d. They will shoot ball as well as any other 3d. They will not carry shot at all as they are invariably rifled. The great reason why breech-loading arms have become so popular is the convenience and rapidity of loading them.

Junius, of N. Y.—Write to the Commissioner of Patents for a copy of Huff's patent for mastic roofing. If there is no such patent he will inform you.

H. W. M., of N. J.—Yes. It takes the same power to project a ball to a given hight as it does to raise it slowly to the same hight, and it would require the same power to generate the required velocity in the balls in your device as you could gain from their descent. Read "Bartlett's Mechanics," which you can buy for about $2.

S. P. C., of N. J.—"Vestiges of Creation" are on sale in this city, price 28 cents. Hugh Miller's "Footprints of the Creator" is also for sale in all the principal bookstores. Price $1. We have already recorded our objections to floats under water for an ocean telegraph. Your scheme of such floats with a ship attached above, for the men and instruments, would obviate them, but we conceive it practically impossible to maintain such a float at any considerable depth under weter. The many long cables to confine it must be very heavy, even if they are not loaded by accumulations of aqueous animals, and every structure will leak when exposed to great pressure.

Money received at the Scientific American Office on account of Patent Office business for the week ending Saturday, March 14, 1857:—

J. M., of N. Y., $25. J. D. S., of O., $25, J. B., of Ill., $30; H. & B., of Eng., $1065; J. P. M., of Mass., $25; T B., of Mass., $110; B. & Van P., of Wis., $30; S. H. & Co., of Vt., $30; H. B., of N. Y., $47: O. J., of N J., $25; Y. & J., of N. Y., $30; W. T, B. R., of Ill., $25; S. & M., of Wis. $25; A. C. B., of N. C., $37; E. H., of Iowa, $26; J. V, J., of Mich., $10; J. J. C., of Mass., $30; C. F. H., of Ct., $25, C. Van. B., of N. J., $30; J. D. S., of Vt., $30; W. S. R., of S. C., $30; C. J., of Ct., $30; F. T., of Mass., $30; W. A. F., of Ct., $30; W. M. S., of N. Y; $100; D. P., of N. Y., $30; G. M., Jr., of Ill., $10; C. M Y., of N. Y., $30; J. O'B., of N. Y., $30; K. & G., of Ill., $55; E. B. B., of La., $30; C. B., of M. T., $50; C. & D., of N. Y., $55; N. R. B., of N. Y., $25; S. B., of N. Y., $60; J. M, of N. Y., $35.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, March 14, 1857:

D. K. A., of O.; W. A. F., of Conn. (2 cases); H. B., of N. Y.; N. J., of N. Y.; J. D. S., of O.; J. M., of N. Y.; M. G., of O.; J. P. M., of Mass.; R. H., of Vt.; S. H. & Co., of Vt.; O. J., of N, J.: W. T. B. R., of Ill; A C. B., of N. C.; S. & M., of Ill.; I. H. C., of Ill. (2 cases); C. F. H., of Conn.; E. H., of Iowa; N. R. B., of N. Y.; S. B., of N. Y., (2 cases); C. B. De F., of Conn; J. M., of N. Y.

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BOILER INCRUSTATIONS PREVENTED—A simple and cheap condenser manufactured by Wm. Burdon, 102 Front st., Brooklyn, will take every particles of lime or salt out of the water, rendering it as pure as Croton, before entering the boiler. Persons in want of such machines will please state what the bore and stroke of the engines are, and what kind of water is to be used. 27 tf

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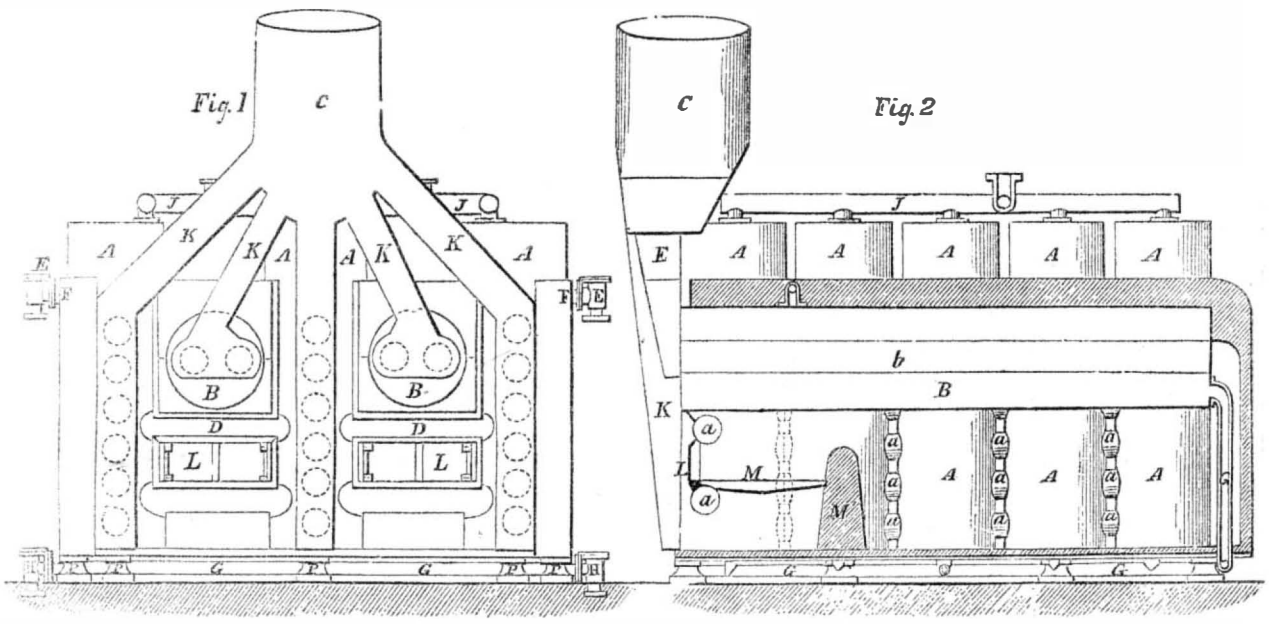
Science and Art.

Simple Weather Prognosticator.

The Mobile *Register* gives an account of a novel "barometer" which is now in use on board of a Mexican steamer. It is certainly simple, and is said to be very accurate. "It is nothing more nor less than a long strip of cedar, very thin, about two and a half feet in length, about an inch wide, cut with the grain, and set in a block or foot. This cedar strip is backed, or lined, with one of white pine, cut across the grain, and the two are tightly glued together. To bend these when dry is to snap them, but on the approach of bad weather the cedar curls over until the top, at times, touches the ground. This simple instrument is the invention of a Mexican guitar maker, and such is its accuracy that it will indicate the coming on of a "norther" full twenty-four hours before any other kind of barometer known on the coast. Had this been the production of Yankee ingenuity, it would have been patented long ago, and a fortune made by its inventor."

Although made to serve as a barometer in pretelling storms, it is, of course, a measurer of the moisture present, and not the pressure of the air. The wood lying across the grain swells with an increase of moisture in the air, as on the approach of rain, while the cedar does not, and the effect is to put the stick "on a bender" as often as the air becomes moist. We should judge it to be a very good hygrometer for this purpose, and one which, from its cheapness, is worthy of extensive use.

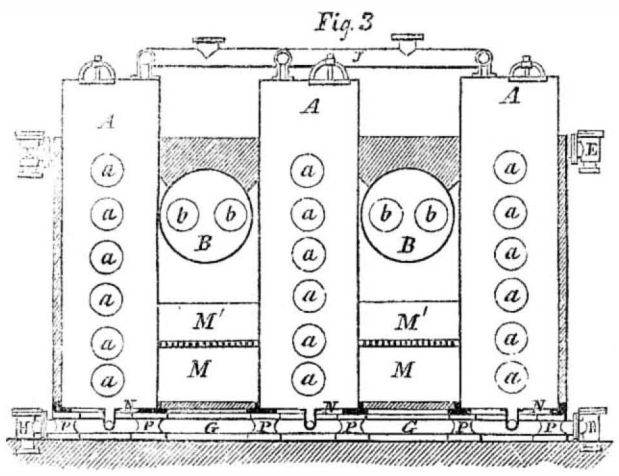
ARMSTRONG'S PATENT STEAM GENERATOR.

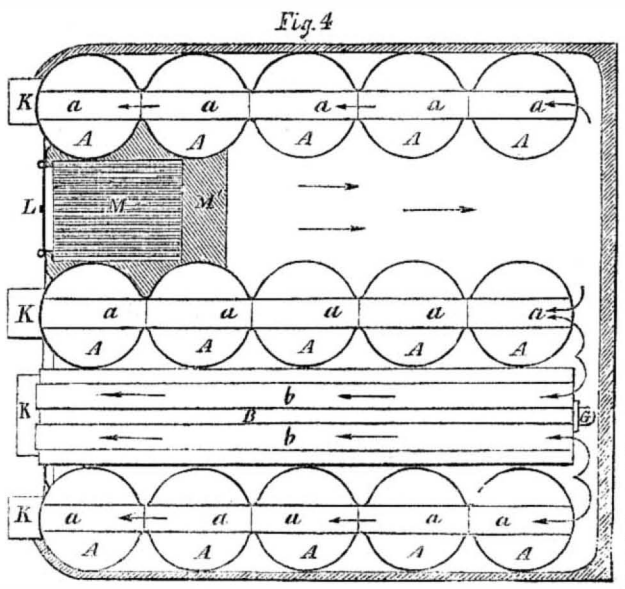


The novel arrangement of all the parts, in the boiler patented by Mr. John Armstrong, of New Orleans, La., in December last, is represented quite clearly in the accompanying engravings.

Since the very earliest period, in the history of steam engineering, the construction of the boiler, the part in which all the force is generated, (generally that of the most expense, and always that of the most danger in case of imperfection,) has been a subject of discussion among all the parties interested, which has yet in nowise abated. The problem to present the most and best arranged heating surface at the least expense, would be quite a difficult one, and of itself might admit of a great variety of solutions, but in fact the matter is much more complexed by the introduction of other elements, which would probably never occur to the merely speculative student. The necessity in many situations, as in locomotives and steamboats, of reducing the quantity and weight of water, might have been anticipated without experience, but the necessity of providing for easily cleaning out in many situations, and for readily obtaining access to every part to conduct the repairs which, to a greater or less extent are continually required, so far confuses the subject, that there now exists almost as many favorite varieties of boilers as there are constructors to build, steamboat owners or manufacturers to pay for, or firemen to attend.

Mr. Armstrong's boiler or steam generator, consists of a combination of parts intended to avoid, so far as possible, all objections, and especially to provide against deposits of mud on the heating surfaces, a point which parties using the water of any river flowing through alluvial deposits, and especially that of the Mississippi, know well how to appreciate. The language of the inventor, which is very clear and concise, may be given in description.





"The object of my invention, as represented in the engravings, is to construct a boiler possessing all the advantages of flued boilers in the proportions of heating surfaces to cubic contents of water, and all the advantages of plain cylindrical boilers in facility for cleaning and accessibility to all parts for repairing, and to possess the desirable quality of not having any portion of its heating surface exposed on its water) side to receive the sedimental deposits of the water; the bottom of the boiler on which the deposits fall, being at a point below the fire, and not exposed to it.

To accomplish the object of my invention as above stated, I arrange three rows of vertical cylinders, A, in size and number, corresponding to the size of boiler required; each cylinder, A, having a series of horizontal flues, *a*, laying in the vertical plane, cutting the centers of all the vertical cylinders in each row, and the flues in all the cylinders laying in one series of horizontal planes, so that with the cylinders of one row standing contiguous, or in contact with each other, a series of flues will be formed, *a a a a a a*, lying in a vertical plane through, and the length of the row of vertical cylinders, A A A A A. The space between each row of cylinders, I make sufficient to form at one end the furnace, M. The top of the space between the rows of vertical cylinders I close by a common double flued boiler, B, the top of which is in the same horizontal plane as the top of the flues, *a*, in the vertical cylinders. The vertical cylinders are all connected together in their water spaces by the pipes, G, on the bottom, and in their steam space by the pipe, J, on the top end; E is the check valve through which the feed water is admitted, and H is the blow-off valve through which the salt or muddy water is discharged. Each cylinder stands on two pedestals, P P, and has the usual man-hole in the top head. The three front cylinders of the three rows, are connected by two large pipes, D D, which form a part of the fire front of the furnaces, and the bearer for one end of the grate bars. The flames or heated gases pass along between the rows of vertical cylinders, and return through the flues of the cylinders and those of the horizontal boiler, and discharge into the breechings, K K K K K, which all unite in one chimney, C.

By thus arranging the heating surface in vertical cylinders with the heat applied to all sides of them, I utilize a much larger proportion of the boiler surface than is usually done in any other form of boiler, there being no portion of the surface of my boiler unexposed to the heat, except that which forms the steam room and the bottom heads of the cylinders, where the mud deposits, while every part, both inside and outside, is accessible fo cleaning and repairing. The lower end of each cylinder being its own mud receiver, collecting vessels, and also steam drums, as used on steamboats of the Western rivers, are dispensed with."

More full information, with large and full lithographic drawings, may be obtained by applying by mail or otherwise, to the inventor, J. Armstrong, corner of Luzette and New Levee streets, New Orleans, La.

Artesian Wells.

The artesian wells of this city, owned by the different sugar refiners, brewers and others, will give over two millions of gallons of water per day, which, at the rate charged for the Croton, would cost the consumers over seventy thousand dollars per year. This sum is equa to the interest of one million dollars, while the wells have cost less than fifty thousand dollars. As the actual statistics are of considerable importance, we present the following relating to several of the most successful :—

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John Harrison	100
Ockershausen	100
Dudley & See	100
Tatham & Brothers	100
John Taylor	100
Howell & Co. (not now in use)	130
Total number of gallons per minute after making all allowances.	1430,

MECHANICS

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